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FEBRUARY, 1901.

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CLASSIFIED INDEX FOR BUYERS, - - Page 345

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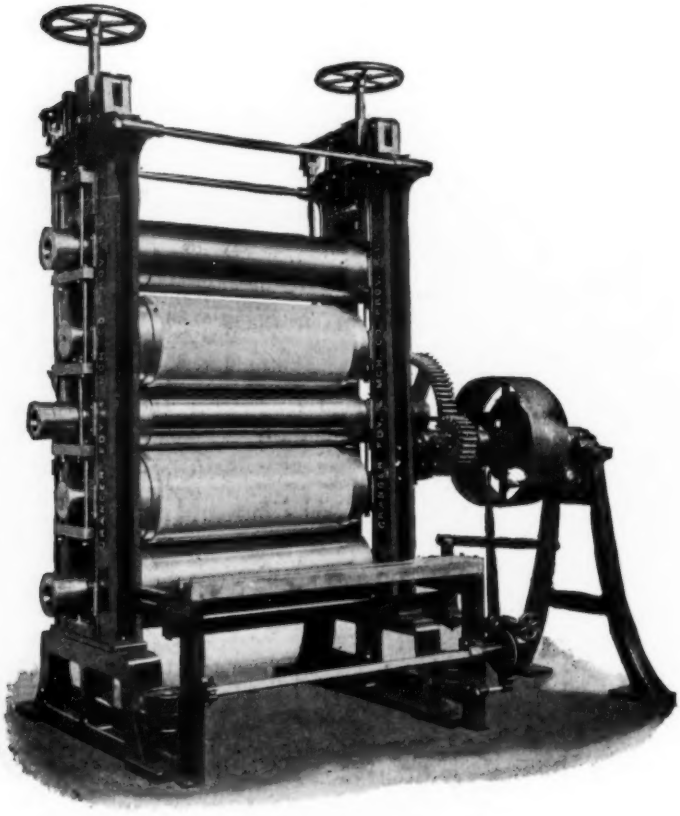

CALENDERS, MANGLES AND ROLLS.

TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

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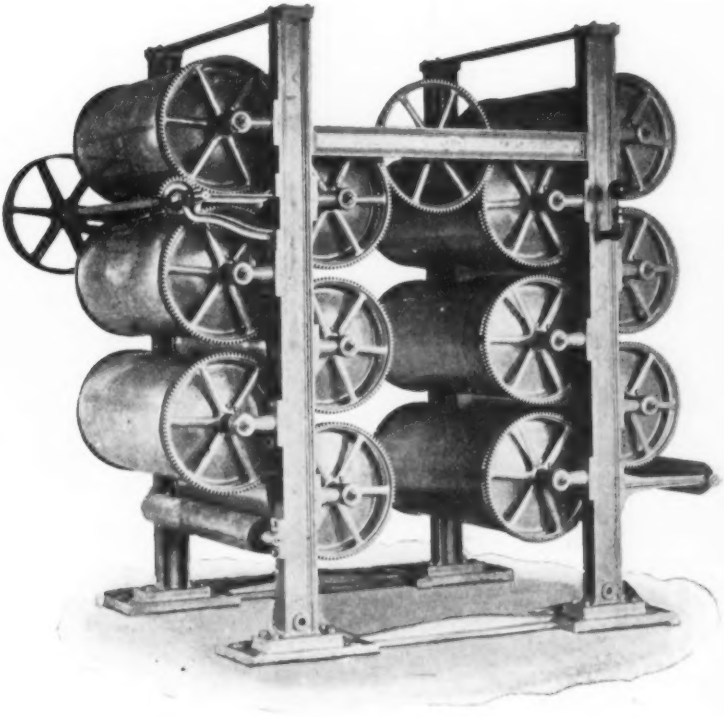

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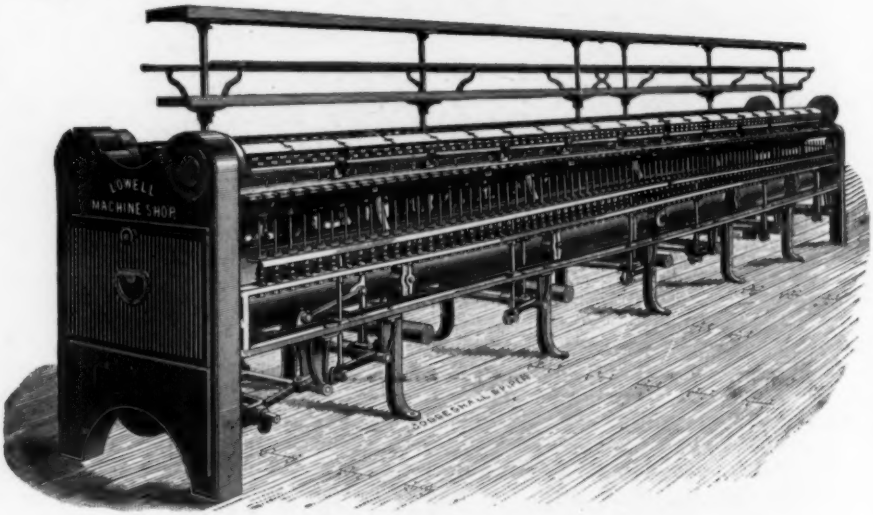

Revolving Flat Cards,
Railway Heads,
Drawing Frames,
Roving Frames,
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Twisters, Spoolers,
Warpers, Slashers,
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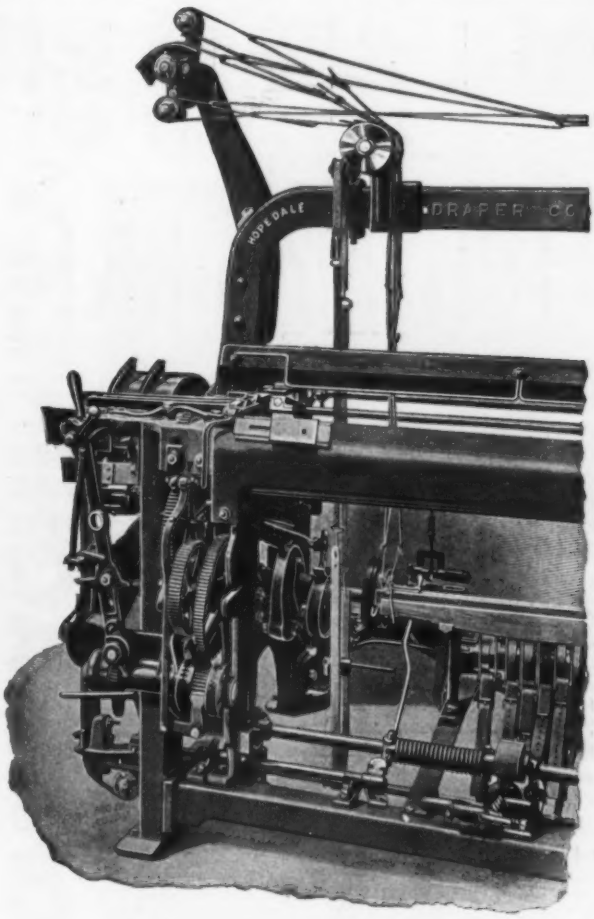

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Twisters.

Reels.

Long Chain Quilling Machines.

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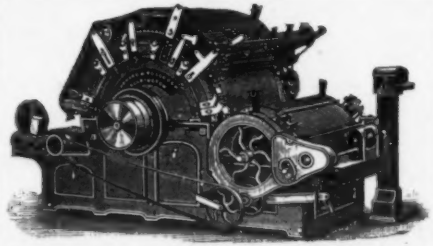

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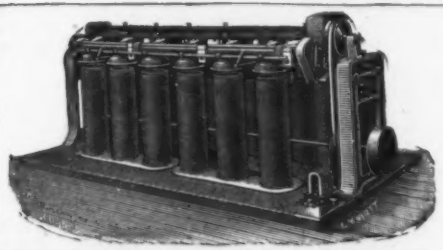

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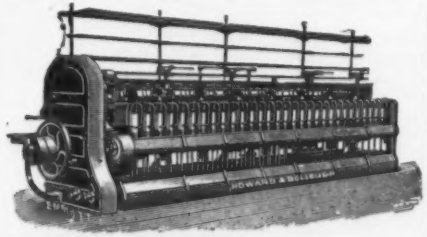

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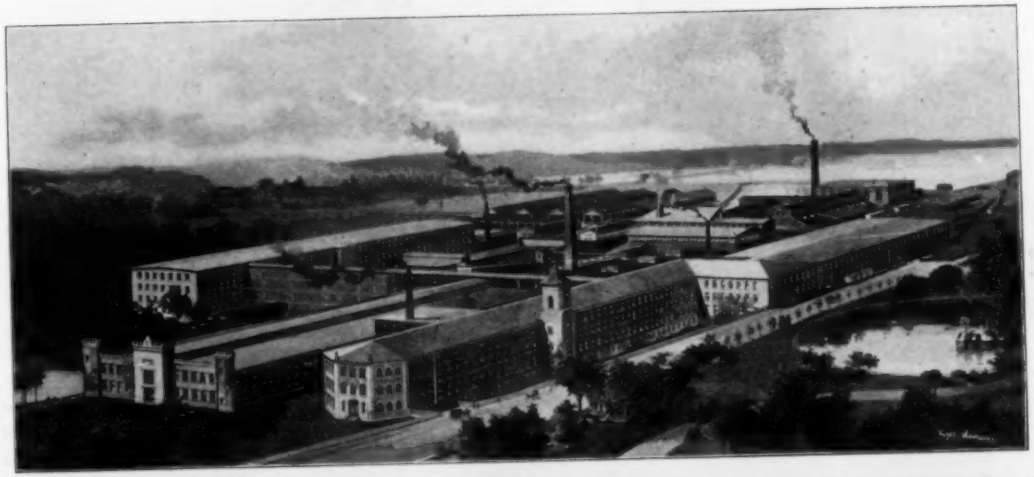

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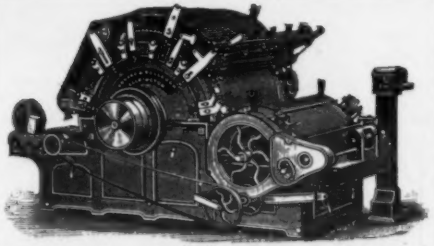

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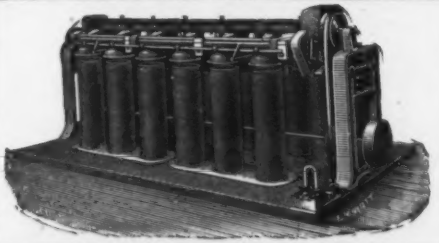

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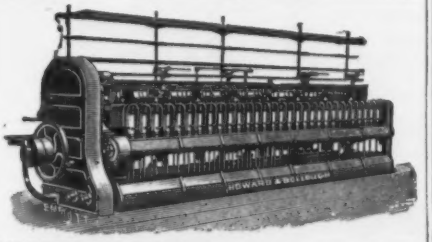

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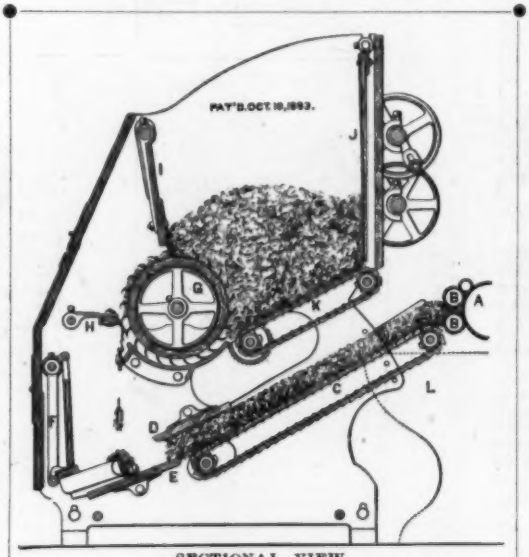

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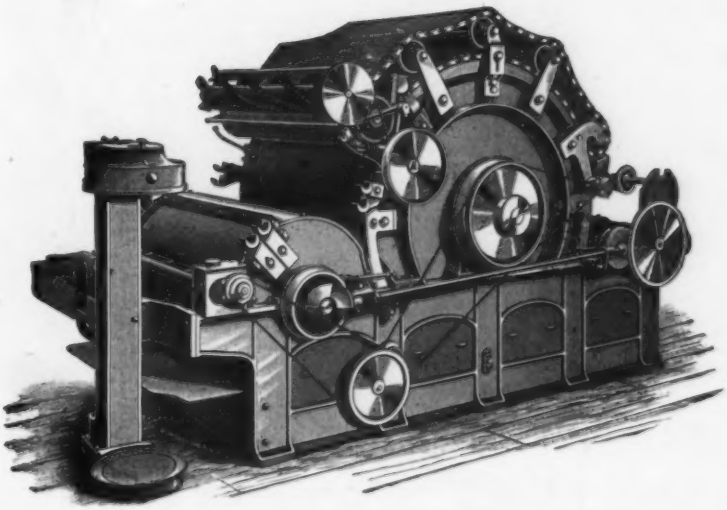

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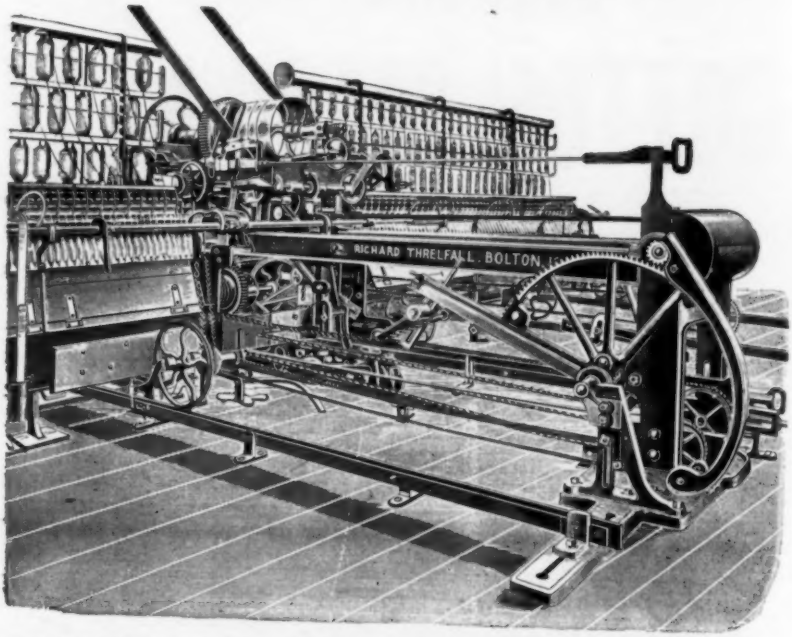

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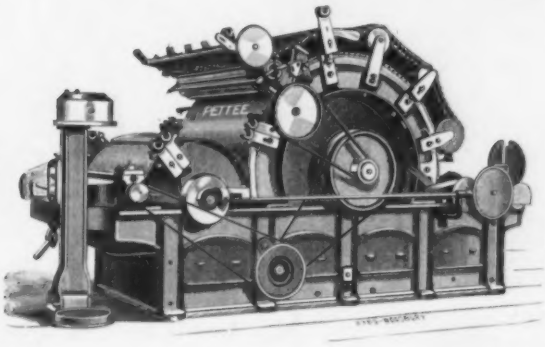

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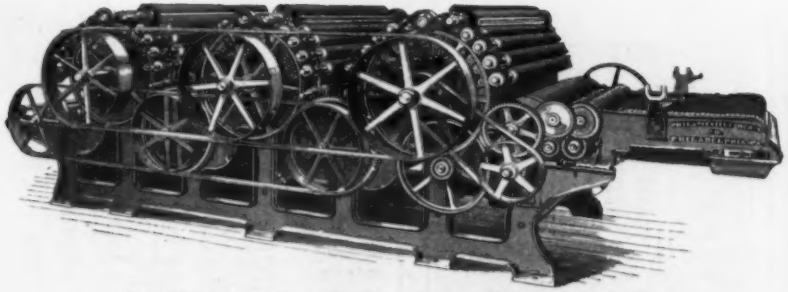

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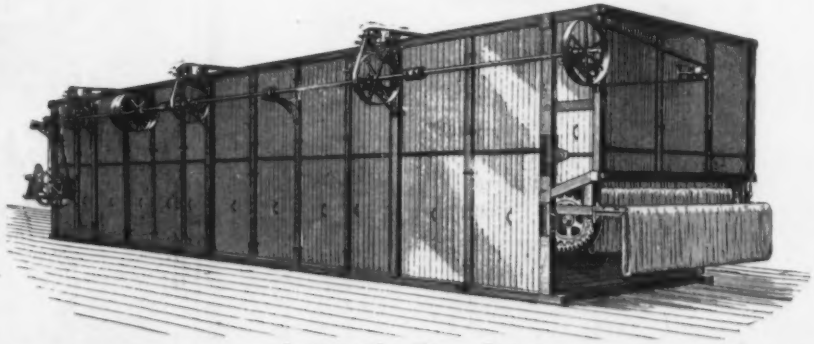

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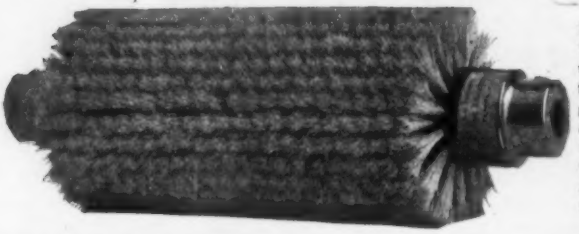

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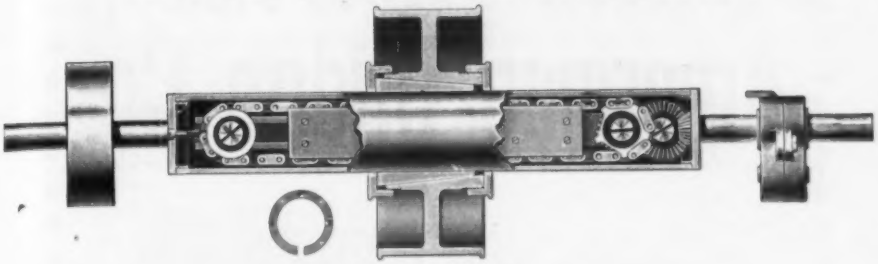

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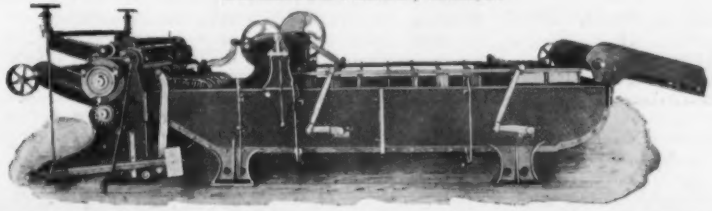

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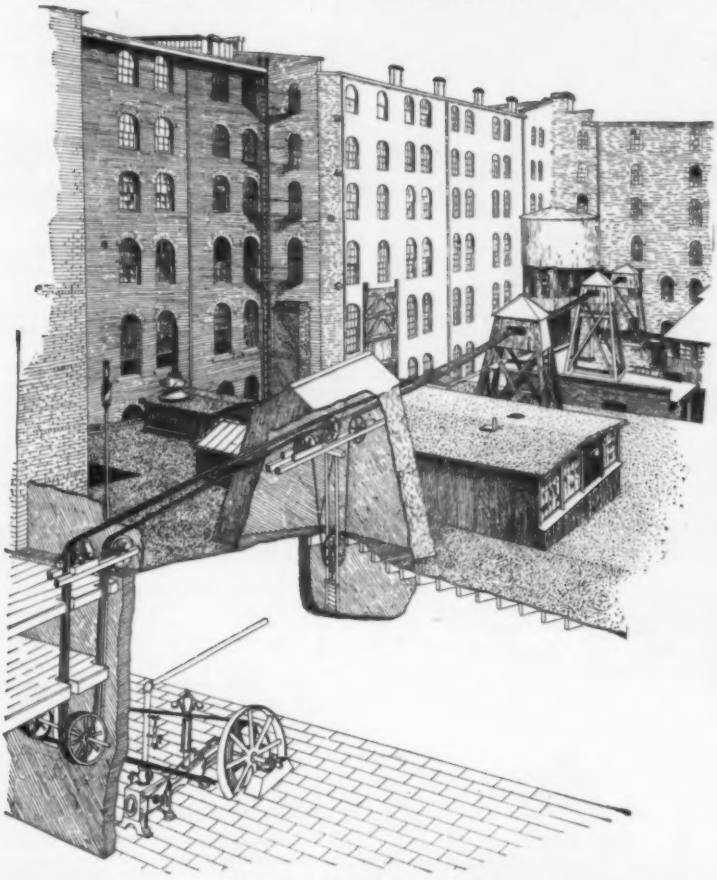

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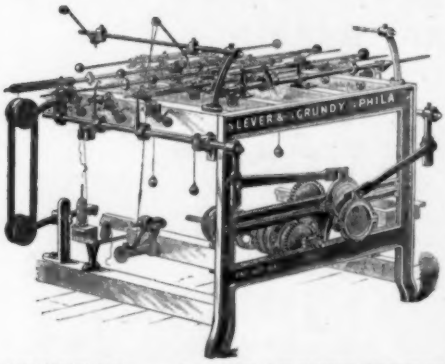

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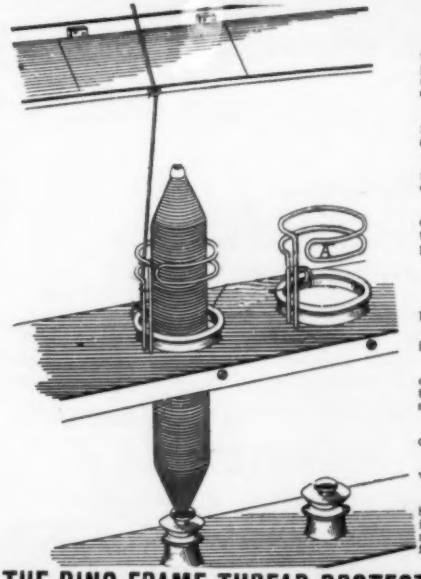
New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production; on frames without any protectors or plate separators about twenty-five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse,

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separaters.

The above results have been obtained in the mills of S. Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y. in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

THE RING FRAME THREAD PROTECTOR CO., - Amsterdam, N. Y.

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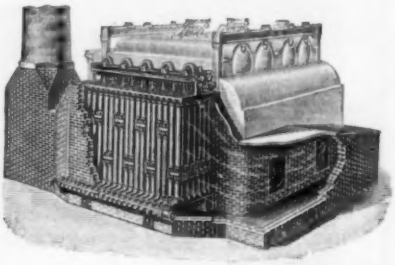

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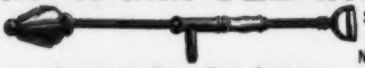

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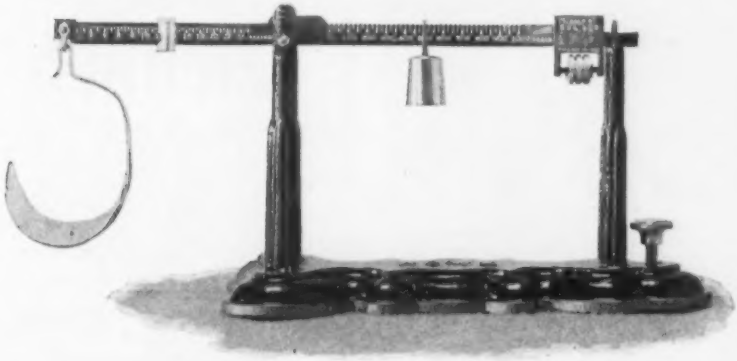

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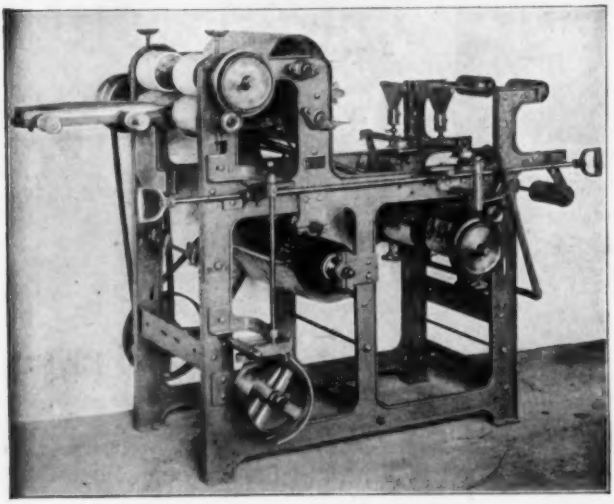

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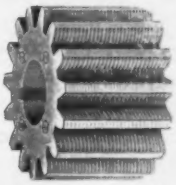

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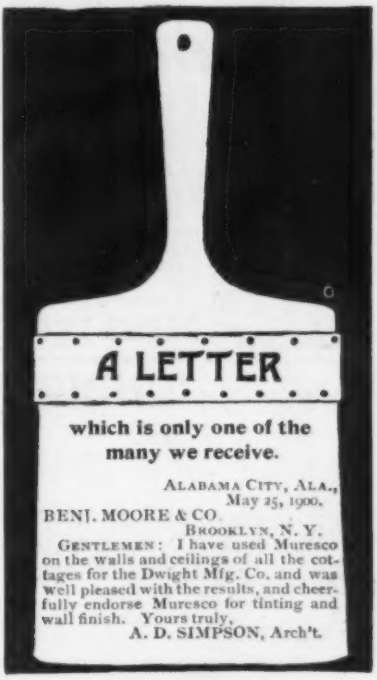

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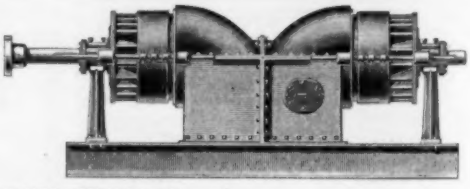

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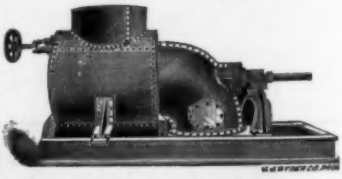

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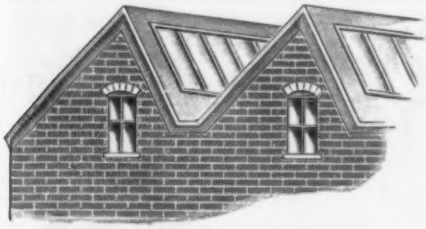

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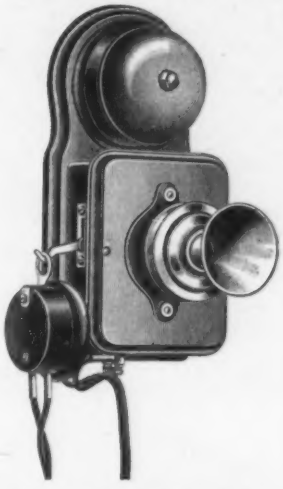

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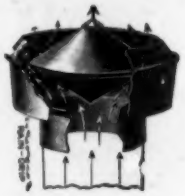

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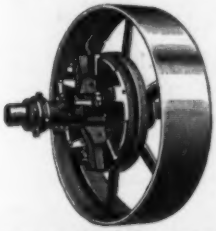

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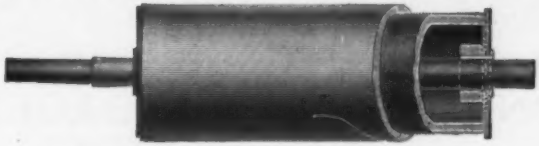

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Chapter 4 is entitled, Weight and Cost of Warps and Weft in Hank, Ball and Otherwise, and includes 16 problems illustrating the various questions likely to arise in practice.

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List of Textile Patents.

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Drying Can or Cylinder. 666,477. A. A. Hunting, Salem, Mass., assignor of one-half to Geo. S. Hooker, Watertown, N. Y.

Dyeing, etc., Apparatus for. 666,056. C. L. Jackson and Edward W. Hunt, Bolton, Eng.

Dyeing. 665,737. E. Haussmann, assignor to Actien-Gesellschaft fur Anilin Fabrikation, Berlin, Germany.

Dye-vat. 665,646. A. Urban, Sagan, Germany.

Knitting Machine. 665,300. J. Adams, Philadelphia, Pa.

Knitting Machine. 665,130. H. C. Rapp and J. M. Weber, Philadelphia, Pa., assignors to the Branson Machine Co., same place.

Knitting Machine, Circular. 665,016. Binus Kershaw, Manchester, Eng.

Loom. 665,135. J. A. Schofield, Bolton, Eng.

Loom, Filling-Supply. 666,272. O. Janelle, Manchester, N. H., assignor to Stephen N. Bourne, Trustee, same place.

Loom for Weaving and Cutting Pile Fabrics. 666,270. R. L. Hattersley and S. Jackson, Keighley, and Benj. Walker, Bingley, Eng.

Loom for Weaving Haircloth. 665,312. A. S. Cowan, Worcester, Mass., assignor to the American Hair Cloth Co., Pawtucket, R. I.

Loom Reed. 664,827. L. C. Baldwin, Manchester, N. H.

Loom Shuttle Tension Device. 665,004. F. S. Hamel, near Tamworth, and James Vellacott, London, England.

Loom Weft, Replenishing Mechanism. 666,385. J. Keith, Providence, R. I.

Looms, Electric Shuttle Motion for. 665,186. J. M. Cryer and Wm. E. Bullen, Poulton-le-Fylde, England.

Loom. 665,674. A. Gartner, Paterson, N. J.

Loom. 665,559; 665,845. Horace W. Wyman, Worcester, Mass.

Loom Warp-Stop Mechanism. 665,713. H. Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, same place.

Loom Warp Stop-Motion. 665,401. J. C. Bryan, Augusta, Ga.

Loom Warp Stop-Motion. 665,591. Horace Wyman, Worcester, Mass., assignor to the Crompton & Knowles Loom Works, same place.

Measuring Machine, Cloth. 666,173. C. H. Young, St. Louis, Mo., assignor of two-thirds to Benj. Witsell and Ferdinand Perrow, same place.

Self-Balancing Spindle. 665,161. E. Atwood, Stonington, Conn., assignor to the Atwood-Morrison Co., same place.

Spindle Bearing. 666,251. E. H. Ryon, Waltham, Mass., assignor of one-half to A. M. Goodale, same place.

Spinning Machine Spindle Support. 666,252. E. H. Ryon, Waltham, Mass., assignor of one-half to A. M. Goodale, same place.

Spinning Apparatus, Yarn. 665,159. W. E. Allen, Salem, Mass., assignor to the Draper Co., Portland, Me., and Hopedale, Mass.

Spinning Frame Spindle-Bands, Device for Regulating Tension of. 665,056. T. A. Boyd, Glasgow, Scotland.

Spinning-Machine Spindle Driving and Band Tension Device. 665,265. J. E. Phillips, Carlisle, Pa.

Spinning Machine Spindles, Bobbin Holder for. 665,384. J. S. Deeley, Caryville, Mass., assignor to W. W. Ollendorff, Medway, Mass.

Spinning Machine Yarn Controller. 665,237. P. M. Libby, Waterville, Me., assignor of one-half to W. H. K. Abbott, same place.

Steaming and Smoothing Tubular Fabrics, Machine for. 665,766. F. Wever, Stuttgart, Germany.

Yarns, Threads, etc., Imparting Silky Lustre to. 665,680. E. Heberlein, Wattwil, Switzerland.

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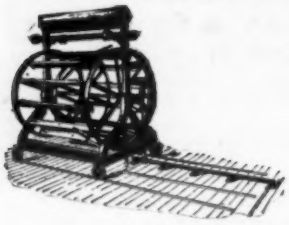

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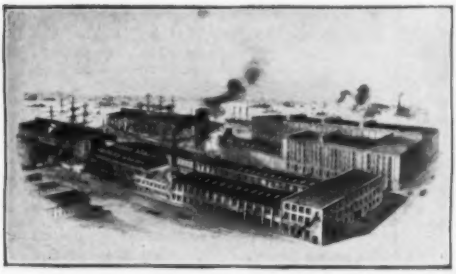

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TEXTILE WORLD.

Vol. XX. FEBRUARY, 1901. No. 2.

W. B. SMITH WHALEY.

The completion of the Olympia Cotton Mills, at Columbia, S. C., which is one of the largest cotton manufacturing plants under one roof not only in this country but in the world, makes it fitting that the promoter and leading spirit of the enterprise, W. B. Smith Whaley, should be the subject of one of our biographical sketches of prominent manufacturers.

This mill contains 104,000 spindles, is driven by electric power, and equipped with the most modern machinery in every department. It is a model mill in every respect, and a striking illustration of the fact that the Southern manufacturers are not so short-sighted as to rely entirely upon the great advantage which reduced labor cost in that section gives to cotton manufacturing, but have, in the construction of their mills, kept in view the best modern equipment.

Mr. Whaley was born in Charleston, S. C., in 1866, and after graduating from the Charleston public schools, took a course in mechanical engineering at the Stevens Institute of Technology, at Hoboken, N J., and then entered Cornell University, where he graduated as a mechanical engineer in the class of 1888. Wishing to qualify himself practically as well as theoretically in the profession which he had decided to follow, he spent considerable time in practical marine engineering on some of the ocean liners, and also in manufacturing plants. He then associated himself with D. M. Thompson, formerly of Thompson & Nagle, and at that time superintending engineer for the mills of B. B. & R. Knight, and under that experienced tutor became thoroughly grounded in the details of mill construction and equipment according to the best practice at that time.

In 1892 he formed a partnership with G. B. Shand, under the title of W. B. Smith Whaley & Company, engineers and architects, in Columbia, S. C. The new firm received little encouragement at first, and it was not until 1893 that it designed its first mill, the Union No. 1, for T. C. Duncan who is president of the Union Cotton and the Buffalo Cotton Mills. In the winter of 1894-95, after long effort and many discouragements, Mr. Whaley effected the organization of the Richland Mills Company, in Columbia, his firm furnishing the plans for the mill.

The Granby Mills, of Columbia, was the next plant they planned, this enterprise being the result of a fortunate business connection with the Columbia Land and Investment Company. The mill was built in 1896, and in the same year Mr. Whaley designed the Union Mill No. 2, then the largest single mill in the South. The success of the firm in these ventures gave it a high reputation, and mill promoters from all parts of the South turned to Whaley & Company for plans and suggestions for their enterprises.

It is now but eight years since Mr. Whaley started his office in Columbia, and yet during that comparatively brief period, the firm has planned and promoted cotton mills in the South containing 539,676 spindles, 14,500

looms, representing a capital of $8,500,000. This is a remarkable record for a new firm, and is a striking illustration of the rapid development of cotton manufacturing in the South during the past few years. In 1880, the entire State of South Carolina contained but 26 cotton mills, with 181,743 spindles, 3418 looms, and $4,084,000 capital. Reckoning by the number of spindles, this is less than 34% of the spindles in the mills built by Mr. Whaley's firm in the last eight years, and the Olympia Cotton Mills alone contain more than one-half as many spindles as were in the whole State twenty years ago. Mr. Whaley is the president of all but the smallest of the four Columbia Mills, which with 191,000 spindles, 4,620 looms, and $3,000,000 capital represent the largest cotton manufacturing investment in the South, and one of the largest in the United States.

Mr. Whaley is a thorough believer in the advantages of electric transmission of power, and as soon as it had been definitely determined to employ electricity in the Olympia Mills, he purchased the electric car lines of the city, also the electric lighting plant, and combined these with the plant at the Olympia Mills, furnishes power and light for the three enterprises, as well as for the other mills in the city. The resultant economies are not only important factors in the net earnings of the railway and lighting systems, but also add to the net income of the mill. Mr. Whaley may well be proud of the record which he has made at the beginning of his career.

—The noteworthy features of our foreign commerce in textiles during December, 1900, are as follows: The large quantity of raw cotton exported, indicating that foreign manufacturers are filling up their empty storehouses; the large amount of money which this cotton represents; the increase both in quantity and value of Egyptian cotton imported; the continued shrinkage in value of cotton goods exported, while our imports of cottons continue at high water mark; less wool is being imported than in any one of the past 11 years except 1894; the imports of woolens continue of fair volume. Our tables of exports and imports give the details.

EMPLOYER AND EMPLOYED IN THE SOUTH.

At present, the surplus of help and low cost of living in the South, give Southern mills an advantage which has been reflected in the rapid development of the industry during recent years.

There are signs, however, that this advantage will not continue indefinitely. The recent strikes or lock-outs in the Carolinas, finally ended by a so-called victory for the mill owners, and the movement towards organization among the mill operatives, indicate that human nature is much the same the world over, and that the Southern mill hand will not be content to work indefinitely for a smaller share of the wealth he produces, than is paid to the mill hands in other sections of the country.

The indications of growing discontent with present conditions, on the part of Southern mill workers, have not been passed by unnoticed by the manufacturers of that section. A law has recently been proposed by D. A. Tompkins, of Charlotte, N. C., designed to regulate the conditions of labor in the Southern mills. He would limit the hours of labor to sixty-six per week. He would require employees to give notice to their employers of intention to leave their employ, under penalty of being deprived of employment for one year in all other mills. He would prohibit labor of children under ten years of age; punish idle parents who live on the proceeds of their children's labor; enforce attendance at school; and provide a system of government inspection to insure the law being carried out.

The provisions restricting child labor, enforcing school attendance, lim-

iting hours of labor, and providing for government inspection, point in the right direction, although falling far short of the conditions in our older manufacturing sections.

The clause requiring notice under penalty of being deprived of employment for one year, is open to most serious objection. It is well calculated to arouse the most bitter antagonism between employer and employee, which is the very thing that should be avoided. This clause is objectionable simply because it is unfair.

Mr. Tompkins' proposed law says to the operative: You must work two weeks in a mill where you may not desire to work, or you will not be allowed to work in any mill for fifty-two weeks.

This savors too much of the labor conditions in the early and middle part of the 19th century—conditions which happily have been abolished forever. The question arises as to what is to become of the man and his family during the year that he is excluded by law from securing employment at his trade. Is the government to provide for his support, or is he to be left to starve or seek other employment of which he has no knowledge?

At a meeting of North Carolina cotton manufacturers, held in February, an address to the State Legislature was signed by forty of the manufacturers. In this document, the signers asked the law-makers to pass no labor law, made the following promises:

(1). That one week's work shall not exceed 66 hours.

(2). That no child less than 12 years old shall work in a cotton mill during the term of an available public school.

(3). That we will co-operate with any feasible plan to promote the education of the working people in the State and will cheerfully submit to our part of the burdens and labors to advance the cause of general education.

(4). On the basis of the above agreements of the cotton mill owners and managers we hereby petition the legislature not to pass any labor laws at this session of the legislature.

This agreement is chiefly interesting as indicating the probability of action on the part of the law-makers to regulate the employment of labor in southern mills. The attempt to substitute an agreement of individual manufacturers for a law regulating labor in a great state possessing a population of 2,000,000, will, we trust, receive the consideration which it deserves.

If a law is to be passed, we believe no wiser course could be pursued than to adopt the essential features of the labor laws now in force in the older manufacturing states. In Massachusetts, children between the ages of eight and fourteen are required to attend school thirty weeks in each year; no child under fourteen is allowed to work in any factory or workshop; no minor can be employed who cannot read and write simple sentences in the English language, unless such minor is an attendant at a day or evening school; and, no minor under eighteen, and no woman can be employed more than fifty-eight hours per week. Such regulations as these will increase not only the intelligence, health and morality of the people, but in the long run will increase the quality and production of cotton cloth.

The present relations between the employer and employed in our older manufacturing sections is the result of a process of development covering many years. That development has been slow, and at times painful to both parties. It has been marked by strikes and lockouts, in which both employer and employed have learned at great cost that each one has rights that cannot be safely ignored by the other; that both are parts of one great operative body, whose efficiency depends upon their mutual co-operation; that employer and employed are indispensable to each other; that the safe path for each to travel is the one indicated by fair play to both.

This constant contact during many years between employer and mill hand in the North, has provided a store of experience which the more inexperienced Southern manufacturer and operative can study with profit. It is a matter of history to be learned from the records, and the advice which it gives is tainted by no self interest. It is simply human experience.

No settlement or readjustment of labor conditions anywhere, East, West, North or South, will be lasting, if not based on fair play and the mutual recognition of the fact that the interests of the employer and employed are one. Conditions are by no means perfect in our older manufacturing sections, but a number of things have been learned. It has been shown that the natural trend is toward a reduction of the hours of labor. It has been proved that a reduction of working time from sixty-six to 58 hours per week, can be accompanied by an increased production of the mills. Child labor has in a great measure been relegated to the rear. Mills may be temporarily inconvenienced, and a small fraction of a cent per yard may be added to the mill cost of textiles, but public sentiment has irrevocably decreed that the years of childhood and early youth shall be devoted to the physical and mental growth of the child, in order that a better and stronger race of men and women may inhabit the land.

We have recently witnessed a struggle in the South between the cotton manufacturers and their employees, in which the right of organization was denied the operatives. Large numbers of them were summarily discharged for joining labor unions. The employers carried their point, and the result of the contest has been accepted as a victory over the operatives. This right of organization, however, is one which the employers claim most strenuously for themselves. They organize in order to regulate the marketing of their goods, and they organize in their contests with their employees. This right of organization is, of course, unquestionable, but it cannot be claimed as the exclusive property of the employer. The operative has the same right, and it cannot be successfully denied him.

The South has a great future. Textile manufacturing has been planted there in virgin soil. No old prejudices arising from past labor troubles are to be contended with. It is a golden opportunity to bring labor and capital into accord on a basis of fair play. Changes must come. Hours of labor will be reduced. Child labor will be abolished. Will the South effect this change cheerfully after a study of the history of older manufacturing sections the world over, or must she have her own bitter experience by which to reach the level of twentieth century conditions in other manufacturing centres?

A GOOD WORD FOR SHODDY.

Calling wool stock shoddy is like giving a dog a bad name. The dog may be all right. The word shoddy is used to describe a sham or pretence. It is shoddy aristocracy, shoddy houses, shoddy anything as well as shoddy cloth.

This is what creates the prejudice against goods made of so-called shoddy. As a matter of fact, there are effects, such for example as are seen in some grades of chinchillas, which cannot be secured without the use of short wool stock or, if you prefer, shoddy. From shoddy is produced cheap, warm, durable clothing for the vast bulk of humanity inhabiting the colder latitudes. It is a blessing to the human race for without this use of a waste product, the greater part of mankind would be clothed in rags or fustian, for wool would be so high priced that but a small portion of the human race could afford to indulge in the luxury of all-wool clothes.

COST OF MANUFACTURING COTTON YARN ABROAD.

The rapid increase of cotton mills in this country makes it imperative that new markets be found for the product, if domestic overproduction and its consequent evils are to be avoided.

The foreign market belongs to the manufacturer producing goods at the lowest cost. For this reason the cost of cotton goods in foreign mills is a subject of much importance. Considerable light is shed upon it by the answers to these three questions asked of the Ost. Wollen und Leinen Industrie.

1. What is a fair weekly production of No. 20 cotton yarn in a 10,000 spindle mill in Austria, running 11 hours per day?

2. What is the average mill cost per pound of this yarn in Austria, including rent, insurance, taxes, fuel, wages, and general supplies, and excluding selling expenses?

3. How many pounds of yarn can on the average be manufactured from 100 lbs. of middling American cotton?

The Austrian journal gives answers to these questions from five different correspondents.

To the first question the replies are as follows:

From Wilh. H.: 10,000 self-actor spindles will produce 21,000 lbs. No. 20 yarn in 6 days of 11 hours each; this is equal to 7/20 lb. per spindle per day.

From J.: The weekly (6 days of 11 hours each) production per spindle on No. 20 yarn, will average 1 85/100 lbs., which for 10,000 spindles would be 18,500 lbs.

From A. St.: The weekly (66 hours) production of an Austrian mill of 10,000 spindles on No. 20 yarn varies from 18,000 to 20,000 lbs.

From R. O.: The production varies according to the speed of the machines and efficiency of the operatives. Assuming that a mill contains 5000 ring spindles on warp, and 5000 self-actor spindles on filling, the production of No. 20 yarn per week of 66 hours, would run from 20,000 to 22,800 lbs.

From A. S.: 10,000 self-actor spindles will produce 19,624 lbs. of No. 20 yarn per week of 66 hours.

To the second question the answers are as follows:

Wilh. H.: The mill cost of manufacturing a pound of No. 20 yarn is estimated as follows:

Wages	$0.0113
General Expense	.0061
Fuel	.0041
Interest	.0077
Insurance	.0009
Taxes	.0012
Salaries	.0015
	.0328

In this estimate, the capitalization is figured at $16.18 per spindle, and the interest at 5 per cent.

J.: Declines to give an estimate, as cost depends upon so many uncertain factors.

A. St.: The cost of manufacturing No. 20 yarn will vary between $0.0303 and $0.0364 per lb.

R. O.: The cost of manufacturing will vary between $0.0344 and $0.0485 per pound.

A. S.: The cost of manufacturing will average about $0.0364 per lb.

To the third question the replies were as follows:

Wilh. H.: 100 lbs. middling American cotton will make 88 lbs. yarn.

J.: Estimates 85 lbs. yarn from 100 lbs. middling American, and calculates the waste as follows:

Preparatory process	7 %
Carding	5½%
Drawing	½%
Flyers	1 %
Spinning	½%
Dust	½%
	15

A. St.: The quantity of yarn obtained from 100 lbs. middling American cotton, will vary between 85 and

90 lbs., according to the quality of the cotton, moisture in the atmosphere, production of the machines, and efficiency of operatives and management.

R. O.: Estimates 87 lbs. yarn from 100 lbs. middling American cotton.

A. S.: Estimates the production from 100 lbs. middling American cotton at 86 lbs. of yarn.

Summarizing the above answers, we find that the estimates as to the production of a 10,000 spindle mill in Austria, per week of 66 hours, vary from 18,000 to 22,800 lbs.; that the estimates of cost per pound for manufacturing run from $.0303 to $.0485; and that the estimated product of yarn from 100 lbs. of cotton, varies from 85 lbs., the lowest, to 90 lbs., which is the highest.

Our manufacturers can compare these figures with the actual cost in their own mills. We would like to have any one who is in a position to make an intelligent estimate, send us answers to these three questions based upon existing conditions in American mills.

This question of foreign competition is bound to become more pressing as the productive capacity of our mills distances domestic consumption.

In January, we called attention to the fact that the new cotton spindles started in this country in 1900, would supply 11,000,000 people, or nearly one-seventh of our entire population, with cotton goods. If this expansion is to continue, our own people must use more cotton goods, or the mills must find an outlet abroad in order to keep running. Which will it be? If we capture the foreign market, it will be only after a war with united Europe, waged not by armies and navies, but by merchants whose only ammunition will be low cost goods.

HEAVY WEIGHT FABRICS.

The lack of any fixed standard for the quality, weight or texture of woolen and worsted fabrics, makes it difficult, if not impossible, for the ordinary reports on the market for woolen goods to give the reader a definite idea of market values, unless he is already familiar with the fabrics referred to. It is only by comparing prices of goods with the quality and make up of the fabric that one can determine whether a price is high or low.

It is for this reason that we give our readers this month an analysis of a few of the heavy fabrics recently offered to the trade. We have selected those shown by the largest producer of woolens and worsteds in the country, believing that their goods furnish the best indication of market conditions.

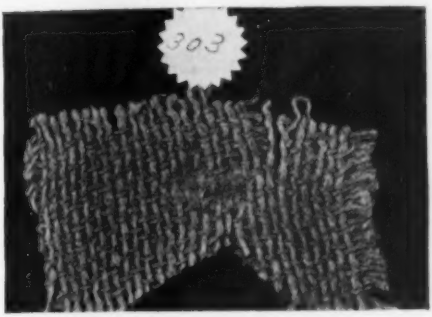
The first fabric (No. 303) is sold as style 1000, and is a piece dyed cotton mixed kersey which was sold last year for $1.07½ and opened this year at $1.05 per yard. The sample which we have examined, weighs 31 6/10 ounces per yard, and contains 54 threads of warp and 37 threads of filling per inch finished. The backing threads are all in the warp which is dressed two-face threads spun about 2¼ runs, and one back thread spun about 1⅛ runs. The filling is spun about 1¾ runs.

The finished fabric contains 17 4/10 per cent. of cotton which is all in the filling and backing warp. The face warp is all wool stock; the weave being three up and one down, brings the wool stock on the face, and throws the cotton on the back. The illustration shows the fabric boiled out, leaving the cotton in the filling and back warp. A small amount, say 25 per cent. of wool might have been used in the face warp. The backing warp and filling needs no wool, as the cotton would be sufficient to give the required strength. A fair quantity of flocks appears to have been used.

Estimating the cost on this basis, we arrive at the following results. No allowance is made for interest charges. Stock, .466; labor, .220; expense, .105; total, .791.

Allowing 20 per cent. for selling expenses, the goods net the mill 84 cents per yard.

The next fabric (No. 304) is a piece dyed cotton mixed suiting, weighing 21 2/10 ounces per yard, sold by the same concern for 55 cents. It contains 29 threads of warp and 26 threads of filling per finished inch, and is woven with a four leaf twill. The cloth "boils out" 16 2/10 per cent. of cotton, which is shown in the illustration.



The yarn is spun about 1½ runs. No wool was used in its manufacture; in fact, the price at which it was sold, precludes the use of wool. An estimate on this basis gives the following result: Stock, .23; labor, .151; expenses, .078; total, .459.

Allowing 20 per cent. for selling expenses, the mill receives 44 cents per yard for the goods, and although this is 1 9/10 cents below the estimate it does not necessarily follow that this particular manufacturer is selling this style at a loss. The estimate is based on the prices at which the raw material is selling for today in the open market. The makers of these goods, however, have an immense quantity of waste made in their various mills, which is well adapted for such goods as these, and which could be sold only at a sacrifice to waste dealers, who would peddle it out to mills throughout the country. For this reason, the manufacturers of this fabric can figure their raw material below the market price. This utilization of waste products in special fabrics is by no means the least advantage which accompanies consolidation in the woolen business.

We will call our readers' attention from time to time to other fabrics of better grades on the market, and trust it will give a clearer idea of trade conditions than can be obtained from the ordinary market report.

—Wool dealers in Sydney, New South Wales, state that the abuses in connection with the packing of wool for the market, still continue in spite of the recent agitation for a reform. Users of Australian wool on this side of the water should keep a close watch of the wool as it is opened up for consumption.

—The approximate temperature of metal which is being worked while hot, can be determined by coating it with a mixture of the iodides of quicksilver and copper. Above 60° C., the color is black, and when the temperature drops below that point the color becomes red again.

—Last year's consumption of cotton in Russia amounted approximately to 960,000 bales of 500 lbs. each, of which about 390,000 bales came from central Asia. This year's crop is expected to be between 450,000 and 500,000 bales, or enough to meet half the quantity required.

Notes of the Month.

—The familiar scheme to require textile manufacturers to label their goods with the percentage of wool, cotton and shoddy of which they are composed, is again revived. Restricted within reasonable limits such a law is feasible and might prove beneficial to manufacturer, as well as consumer. The loading of textiles with size or chemicals that absorb water and thus add weight to the goods, should be the first to receive attention. This is a practice of long standing, in the silk industry, and has been extensively employed by English manufacturers of worsted and cotton goods.

—Requiring goods to be marked with the percentage of shoddy contained in them, is wholly impracticable for one reason alone. There is and can be no way of determining the percentage of "shoddy" as distinguished from the wool in a fabric. "Shoddy" is simply a name given to wool stock that has been either wholly or partially manufactured into cloth, and afterwards torn or picked apart for remanufacture. Many grades of "shoddy" are better than some wool in its original state. The absurdity of a law whose violation could not be detected, needs no demonstration. Such a law would simply be placing a premium upon dishonesty, by giving legal sanction to the masquerading of goods containing no wool behind a ticket labeled "all wool," and without the remotest possibility of proving the case against the offender.

—It would be far better to pass a law providing for instruction on the subject of textiles in the public schools. Instruction is now given in some of the schools as to the effects of alcohol on the inside of the human anatomy, so that the proposed school instruction as to clothing for the outer man would not be wholly without precedent. This might eventually lead to the lifting of that dense cloud of ignorance on this subject, that now envelops the consumer. It might likewise result in the manufacturer receiving credit for turning out a well made fabric. Where is there a textile manufacturer who has not met with that stupid, unreasoning, exasperating and widespread prejudice in favor of imported goods?

—An incident in a manufacturer's experience illustrates this point. He had devoted his best efforts to the construction of a frieze fabric, and the filling of a large order for the goods. After their delivery he passed the customer's store, and saw in the show window a frieze overcoat made from these goods and bearing the label "Genuine Dublin Frieze." Passing into the store, he asked the clerk to show him one of the coats, and was solemnly informed that the cloth was a genuine imported Irish frieze, and that the American manufacturer could not make such goods. The manufacturer gazed upon this product of foreign skill, and then left the clerk in the possession of the "Genuine Dublin Frieze" overcoat and the belief that another man had been impressed with the superiority of foreign goods.

—The annual meeting of the National Association of Wool Manufacturers, was held in January, at the Hotel Savoy, New York. The meeting was well attended, and quite a number of woolen commission agents were welcome guests. A very interesting paper on "Humidity" was read by E. W. France, and at the banquet the principal address was delivered by Senator Warren of Wyoming. President Harding spoke on "Some Recent Aspects of the Woolen Trade," and the annual report was read by Secretary North. The increased use of cotton and shoddy in the industry hitherto known as woolen manufacturing, was admitted by all, and all were strongly impressed with this change

in the raw material of the industry, even to the chef in charge of the dinner, who substituted cotton for wool in the miniature bales placed at each plate.

—The manner in which matters relating to technical subjects are distorted by the daily press, has received a striking illustration recently in the references to the carding and spinning machine invented by Nicholas Cupers of the Netherlands, and which is now controlled by W. H. Drury, of Boston. A despatch from London startled the world by stating that the machine was about to revolutionize the woolen industry, and this was copied far and wide on this side of the water. The revolution grew until it included not only the woolen but the cotton and linen industries as well. We examined this machine in operation in Boston several years ago, and while it may be useful on certain kinds of work, particularly coarse yarns when no draft is required, it is likely to be confined to a narrow field. To the practical observer, it fails to suggest a revolution of anything except its own wheels, gears, rollers and threads, but appears to be a device that can be used to advantage for coarse yarn for certain uses.

—The flirtation with free wool appearing in the recent address of the secretary of the National Association of Wool Manufacturers, has attracted much attention from European journals. They hail it as an indication of a coming reduction of the American tariff rates, and appear as confident that such reduction will benefit European manufacturers, as the secretary is that it would benefit our own cloth makers.

—Another attempt is now being made to form a combination of knit goods manufacturers making "flat goods" in the Mohawk valley and adjoining districts.

Under the plan proposed by the promoters of the combination the mill owners are to accept guaranteed 7 per cent. preferred stock or bond issues of the proposed corporation, which will take over all stock on hand and all first-class negotiable paper. Any mortgage or other liability on individual mills will be released so that there will be no interest charges to be provided for except on its own security issues. A working capital of $8,000,000 is contemplated.

—The first report of the Utah Silk Commission recently filed states that the amount of cocoons raised in Utah during 1899 and 1900 was 7,493 pounds. During the past two year the commission expended $590 for silk worm eggs, and $13.50 for mulberry seed. The report contains an earnest appeal that the state pay the commission for its services. The members feel encouraged by the present outlook for the industry and urge a more liberal appropriation for the work.

Opening of Heavy Weights.

Practically all of the various lines of heavy weight woolens and worsteds for men's wear are now on the market, and while the prices show a considerable drop from those of last year, it must be borne in mind that last year's prices were made when the wool market was practically at its highest point, and manufacturers were facing extraordinarily high values for the raw material. In view of this fact, the prices now made cannot be considered any too low. The American Woolen Company, as was expected, set the pace with the prices which they placed on their goods.

Following are the quotations on the various lines for January, 1900 and 1901:

American Woolen Co.'s lines:

UNFINISHED WORSTEDS.

	Jan., 1901.	Jan., 1900.
A 3118 . . .	$1.20	$1.42½
A 3116 . . .	1.12½	1.30
118-3 . . .	1.65	2.00

818-27	1.37½	1.75
12061X	1.12	1.25
12092X	1.00	1.15
12071X	1.12½	1.25
12071	1.20	1 35

THIBETS.

	Jan., 1901.	Jan., 1900.
J 3013, 18 oz.	$1.00	$1.12½
48, 18 oz.	.90	

CLAY MIXTURES.

	Jan., 1901.	Jan., 1900.
H 4416	$1.20	$1.37½
4918	1.30	1.50
6118	1.50	1.87½
6120	1.62½	2.00

WORSTED CHEVIOTS.

	Jan., 1901.	Jan., 1900.
H 820-86	$1.87½	$1.50
H 5930	1.62½	2.00

SERGES.

	Jan., 1901.	Jan., 1900.
318-12	$1.12½	$1.30
418-1	1 25	1.42½
420-2	1.35	1.52½

SATIN STRIPE WORSTEDS.

	Jan., 1901.	Jan., 1900.
822-12	$1.62½	$1.87½
720, 20 oz.	1.50	1.75
5403	1.55	1.80

FRENCH BACKS.

	Jan., 1901.
814-68 14 oz.	$1.35
814-70 14 oz.	1.25
816-69 16 oz.	1.45
818-50 18 oz.	1.57½
818-70 18 oz.	1.50

STANDARD CLAYS.

	Jan., 1901.	Jan., 1900.
11 oz.	$0 97½	$1.20
12 oz.	1.00	1.25
14 oz.	1.12½	1.40
16 oz.	1.25	1.57½
18 oz.	1.37½	1.72½
20 oz.	1.50	1.87½

Geo. O. Leavitt dept. Oelbermann Dommerich & Co., have opened 20 oz. cheviots at 87½c. and $1.00; cassimeres, 21 oz. at $1.10, $1.27½ and $1.37½.

Bacon & Co., opened Sterling, 21 oz. fancy worsteds, at $1.45 (last year, $1.75).

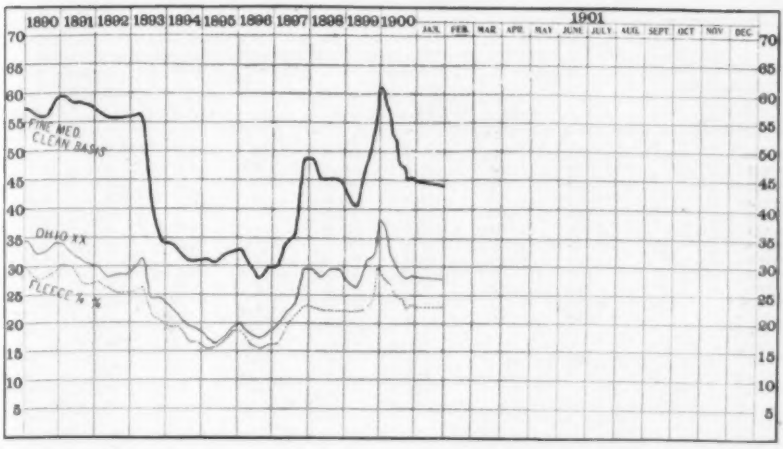
Graham dept. Cooley, Turnbull & Co., is showing a line of 19-20 oz. unfinished fancy worsteds, at $1.50, $1.62½ and $1.75.

Hoffman & Cross dept. Bossut Pere & Fils, have opened their line as follows: Cotton worsteds, Taconic, 19-20 oz., at 80c.; Eclipse, 20-21 oz., at 90c.; Wachusett, 21 oz., at $1.05 (last year, $1.25-5%); Wallum, 21 oz., $1.07½ (last year $1.20); Wachusett XX Twist, 21-22 oz., at $1.25-5%; Narragansett, 21 oz., at $1.42½ (last year $1.62½); Matunuck, 21-22 oz., at $1.50 (last year $1.80); all worsted Aguila, 19 oz., at $1.75 (last year $2.00); and Housatonic, 21 oz., at 2.12½; Representative, wool and worsted, 21 oz., at $1.90; Roanoke com. all wool cass., 21 oz., at 87½c. and $1.00; Conanicut twist cass., 21-22 oz., at 97½c. (last year $1.12); Stockbridge all worsted cheviot, 20 oz., at $1.42½; Agawam Fcy. unfinished worsted, 20 oz., at $1.75 (last year $2.00); Housatonic all wool cass. and chev., 4 grades, 21 oz., at $1.00 to $1.25.

Hoffman & Cross also show a full line of Clays, Serges, Cheviots and fancy patterns and unfinished worsteds. Among them are the following: Style 28, Clay, 17-18 oz., at $1.60 (sold during last year at $1.82½); Serges, 18 oz., at $1.37½ (last year $1.57½) up to $2.00; Cheviots, 20 oz., at $1.32½ up to $2.25 Unfinished Worsteds, 17-18 oz., at $1.47½ up to $2.25; Thibets, 18 oz., at $1.00 up to $1.75; Fcy. Weaves (shell, etc.), 18 oz., at $1.37½ up to $2.00; Venetians, 18 oz., at $2.00 up to $2.25; Imported, French Backs, 16 oz., at $1.60; better quality, all weights at $1.70; Venetians, 16 oz., at $1.50 up to $3.00.

—During the ten months ending with October 31, 1900, Great Britain imported from Brazil (according to the official returns) 24,490,200 pounds of cotton, valued at $2,944,109. During the same period in 1899 the imports aggregated only 673,800 pounds, at a total valuation of $56,813. The total value of all kinds of cotton piece goods exported to Brazil from Great Britain during the first ten months of 1900 was $4,399,004, against $4,929,227 during the same period in 1899.

WOOL MARKET.



There have been no indications of a revival of activity or strengthening of prices in the wool market, and January closes with transactions small and prices weak.

The bearish sentiment has been encouraged by the reports of immense stocks of wool on hand; these reports were eagerly accepted by buyers of both wool and woolen goods, and used as a club to force concessions from manufacturers of goods and weary holders of wool.

The Boston wool trade resented the circulation of these statements as to excessive stocks of wool, by an agreement on the part of the leading dealers not to furnish the press in future with information as to sales of wool. They have thus far taken no steps to furnish a substitute for these reports, although the best friends of the wool trade are convinced that the agreement mentioned above was hasty and ill-advised, and calculated to work injury to the trade in general, and that of Boston in particular.

Supply and demand have a way of regulating prices regardless of the publication or suppression of so-called statistics. The latter may temporarily effect quotations but in the end the balance between supply and demand will settle the question.

Rightly or wrongly the impression is abroad that the new clip will find a large quantity of the old clip to keep it company.

The business in heavy weight overcoatings has been of fair volume. prices for both overcoatings and suitings are lower than last year, but no more so than the decline in wool prices would warrant.

A general view of the present situation discloses nothing to create uneasiness for the future on the part of owners of wool. Prices are not far from the highest quotations recorded under a free wool tariff. There is no probability of tariff changes, and as our climate is not growing any milder, wool will continue to form a large part of the clothing of our people. Under these circumstances there is nothing to warrant the fear of any considerable decline from present quotations.

The foreign markets continue depressed. This is especially the case in France, where the last boom stimulated by dealings in wool futures, was carried farther than in any other country. The last London sales opened at an advance that was not sustained on later transactions, which were made at figures not materially higher than the level of the previous series.

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.		Imports.					
	Wool.		Wool.		Shoddy, Noils, etc.		Yarn.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.3	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.9	.3	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	26.5	2.0	10.3
1897	5.371	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	3.3	6.9	.3	1.9
1899	1.653	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.3
July	.001	.002	7.7	10.6	.017	.050	.018	.132
Aug.	..	.	6.8	9.2	.047	.182	.022	.161
Sept.	..	..	7.2	7.9	.033	.127	.019	.132
Oct.	.106	.113	7.8	7.9	.040	.124	.012	.082
Nov.	..	..	6.3	8.3	.125	.286	.013	.087
Dec.	..	..	8.2	10.0	.096	.302	.021	.108

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

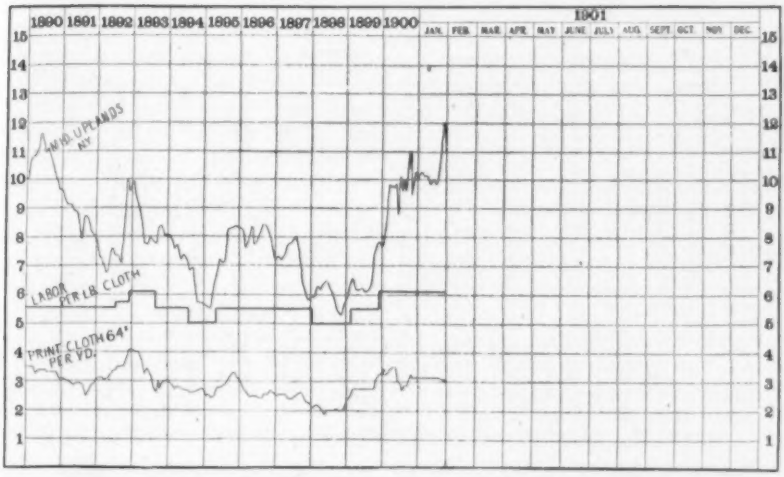
Year Ending June 30.	Exports — Value.						Imports — Value.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Other.	Total.	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	.719	4.374	7.5	161.4	242.0	10.1	18.4	19.8	66.2	525.4
1891	.184	..	.265	4.240	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.4
1892	.093	..	.244	2.689	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.2
1893	.115	..	.242	2.224	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	1.685	7.744	9.6	67.6	85.8	1.6	8.6	10.0	7.2	190.4
1895	1.610	..	.498	3.161	1.432	6.701	13.6	163.0	144.0	2.0	10.0	9.4	11.8	353.8
1896	2.252	..	.370	3.653	2.860	9.135	8.9	218.9	199.3	4.5	13.0	25.4	27.4	497.4
1897	1.895	..	.573	3.858	3.150	9.476	7.8	170.1	167.9	4.6	9.8	25.3	27.0	412.5
1898	1.642	.414	.474	4.290	4.074	10.89	17.9	39.6	60.4	.4	7.6	3.9	9.6	139.4
1899	.811	.169	.427	5.388	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.5
July	.076	.004	.058	.429	.488	1.055	3.02	7.25	8.52	.07	.06	.46	.55	19.93
Aug.	.084	..	.146	.726	.726	1.682	2.77	5.85	6.22	.15	1.79	.42	.48	17.68
Sept.	.028	.024	.014	.738	.628	1.432	2.13	2.56	2.34	.06	2.73	.68	.45	10.94
Oct.	.149	.004	.041	.602	.577	1.37	1.68	1.82	2.01	.10	1.50	.49	.41	8.01
Nov.	.085	.006	.106	.816	.355	1.37	1.42	1.96	1.74	.08	.64	.41	.41	6.66
Dec.	.049	.002	.219	.658	.333	1.26	2.56	2.27	4.12	.05	.57	.23	.41	10.21

—The French lace workers have been working 12 hours per day. Two sets of hands are employed. One works from 9 a. m. until 1 p. m., and from 6 p. m. to 2 a. m., the other set taking their places during the intervening time. The workers have recently secured shorter hours for a few months, and are now trying the new system.

—The new contracts for woolen khaki just placed by the British government, call for a fabric different from the khaki now in use. The new cloth is to be wool dyed instead of piece dyed; the khaki color is to be darker, and a slight admixture of white is to be added. Owing to the extreme depression in the English woolen trade, the prices are unusually low, and it is stated that woolen goods are now being sold in England at lower prices than ever before.

—Coating the inside of steam boilers with graphite, is recommended by the Brunner Monat. fur Textil-Ind., as an excellent means of preventing the formation scale without injury to the boiler.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900
1901
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
MID. UPLANDS N.Y.
LABOR PER LB. CLOTH
PRINT CLOTH 64" PER YD.

Speculations during January have taxed still further the capacity of the chart at the head of these columns, but a "corner" in cotton in our market for a few days, and the consequent soaring of prices within a narrow radius, is no indication of broad market conditions.

There are but two controlling factors in the broad movement of cotton values, the amount of cotton grown and the quantity of manufactured goods consumed.

The usually quiet conditions prevailing in the cotton market at this time of year have been interrupted by the New York corner previously referred to. Other markets have shown steadiness and strength, and apparently the recollection of the scarcity last summer, has created a bullish sentiment of unusual vigor. Reports from English markets indicate that consumers there have replenished their depleted stocks under the influence of this sentiment.

The goods market both here and abroad has been dull with prices firm in sympathy with the high quotations for the raw material. There is, however, no scarcity of yarn or manufactured goods. The yarn trade is contending with the burden of accumulated stocks, and a similar condition exists in the print cloth market.

No reduction in price of goods is possible with 10 or 12 cent cotton; curtailment of production is the only alternative for the manufacturer, and if resorted to, is bound to influence the price of raw material. While the return to the low price for raw cotton prevailing during recent years is not expected, there are no grounds for accepting the extravagant prediction of a further advance.

The present high prices will turn the entire South into a vast cotton field during the coming season, and with anything approaching favorable weather conditions, the Southern planter may be trusted to supply the world's demand. The Curonicle reports the visible stock, Jan. 1, at 4,248,900 bales, compared with 4,167,052 bales at same time in 1900, 5,697,559 bales in 1899, and 4,965,154 bales in 1898.

—The breaking of one of the supporting pillars in the lower story of a new mill at Mossley, England, resulted in the collapse of the four-story building. The machinery on three of the floors was carried down.

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value	Lbs.	Value.	Lbs.	Value	Value. per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2893	2876	2907	2907	10.00	..	..	20.9	2[illegible].2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1893	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2669	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	28	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1862	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21	41	3082	2268	3103	2309	7.12	..	..	51.9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.2	50.1	9.98	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	38.6	17.7	67.4	79.6	11.81	7.9	2.4
July	..	..	77.5	76.5	..	..	9.86	3.51	1.70	1.88	2.69	14.31	.39	.14
Aug.	..	..	54.0	52.4	54.0	52.4	9.70	3.60	1.84	1.22	1.53	12.50	.54	.18
Sept.	.1	.2	195.4	201.8	195.5	202.0	10.33	3.76	1.95	2.99	3.82	12.77	.66	.16
Oct.	1.1	2.6	618.2	602.1	619.3	604.7	9.76	8.19	4.48	3.17	4.39	13.85	.42	.13
Nov.	.95	2.3	433.6	413.7	434.5	415.9	9.57	4.15	2.28	3.89	5.70	14.65	.85	.26
Dec.	1.28	2.5	454.6	439.1	455.9	441.6	9.68	3.84	2.16	7.69	11.83	15.4	.42	.10

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30.	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	38	76	5	24	143	33.8	1	16.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.2	27.7	116.9	6.6	65.4	59.9	332
1896	34	95	7	32	168	49.3	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	272.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
July	4.58	10.28	1.06	2.66	18.58	3.55	.07	.91	14.42	2.32	4.17	6.59	32.05
Aug.	4.15	3.12	1.31	2.55	11.13	2.72	.07	1.52	15.70	1.77	4.65	6.17	32.60
Sept.	5.42	3.61	1.27	2.42	12.72	2.90	.12	1.57	14.88	1.32	4.28	4.75	29.82
Oct.	4.62	3.21	1.32	2.97	12.12	2.80	.17	1.29	19.19	1.46	3.41	4.24	32.56
Nov.	4.44	4.62	1.41	2.49	12.96	4.53	.14	.82	14.33	1.46	2.22	3.54	27.04
Dec.	3.97	3.62	1.60	2.62	11.81	9.16	.42	1.05	21.46	1.31	3.81	3.47	40.68

—Owing to the advance in price of flax, due to two successive short crops in Russia, continental manufacturers, says U. S. Consul at Zittan, are showing increased interest in the American product. Experiments with our flax have been made in Europe. The quality was found to be fair, but the flax was not marketable, owing to the condition in which it was packed, the fibre being so crumpled and tangled as to prevent its use. Foreign flax is carefully wrapped in small two-pound bundles, in such a way that the fibre cannot become tangled. These bundles are packed in bales weighing from 165 to 330 lbs., and in this form offered for sale. Samples of raw flax sold in European markets, have been received and placed on file in the Bureau of Foreign Commerce at Washington, for examination by any one interested.

—A French writer estimates that since 1885, wages of operatives engaged in the manufacture of broche silks at Lyon, have decreased at least 40 per cent.

The Co-operative and Social Problem in Large Manufacturing Enterprises.

The desire to avoid friction between employer and employee, and to effect the great savings that would surely result from each employer having a personal interest in the work and bringing his services to the highest efficiency, makes the theory of industrial co-operation attractive, and has led to the trial in all ages of various systems for effecting this result.

This is true of all industries and every human enterprise in which more than one person is engaged. All of us have seen a body of men pulling on a rope to move some object. The "All together" of the foreman is the call to co-operation, and the ease with which the work is done when all do pull together, is the reward of each individual. The employer or foreman who creates this spirit of co-operation in his subordinates, who makes each one feel that he is a part of a system, and that he personally has an interest in the general result, gets the by far best results from his employees.

The difficulty of preserving this feeling of common interest increases with the increase of the number of employees. The workmen must necessarily be placed under foremen who are in turn under the orders of other employees higher in authority, and the harmony of action under such a system is easily lost. The attempt to preserve this co-operation among large bodies of men necessarily involves much detail, and among the Germans, who have a genius for details, we find the highest development of this social experiment.

One striking example of harmonious co-operation in the development and operation of an immense business, is the Badische Anilin-Soda-Fabrik, manufacturers of coal-tar colors, in Ludwigshafen on the Rhine. This business was established thirty-five years ago, and their system of caring for their employees has been extensively developed, with the result that no strike or labor dispute has ever occurred there. A pamphlet recently issued by that company gives an interesting insight into their methods. This industry is of comparatively recent growth, being co-incident with the development of the coal-tar color industry. It is but thirty years ago since dyers used the coloring matters derived from plants and animals almost exclusively, and the series of discoveries in the manufacture of coal-tar colors which began at that time have resulted in almost the complete substitution of these dyes for the natural products.

This new industry is centred in Germany, and three-quarters of the production is exported to other countries. The coal-tar colors imported into the United States alone, during the decade ending June 30, of the present year, were valued at $28,483,393. The imports for the last year amounted to $4,890,072. Nearly 80 per cent. of these goods came from Germany.

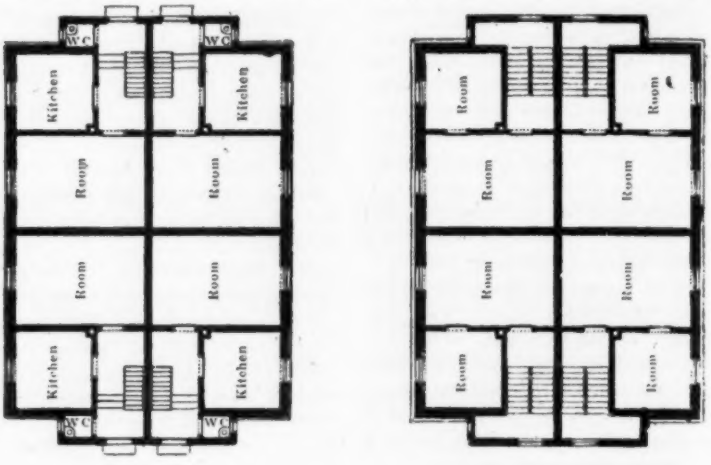
Founded in 1865, the Badische Company began with 30 hands, and now employ 6300. The hours of labor are from six to six, with an interval from 8 to 8.30 in the morning, and 12 to 1 at noon, and a pause at 4 oclock in the afternoon. The company recognize that pleasant and convenient hours for the workman and his family is necessary to make them contented, and have erected one-story-and-a-half houses for the workmen, each building accommodating four families, giving the ordinary workman two rooms, an attic, kitchen and cellar, with 150 square yards of garden. The foremen's houses accommodate four families, and give three rooms, an attic, kitchen and cellar to each. These houses are shown in the accompanying illustrations.

The company provides free transportation to and from their homes to those who live in another colony five miles from the works. The weekly rent is 43 cents for a workman, and 55 cents for a foreman. Public dining rooms are provided, at which a dinner corresponding to the ordinary soldier's ration is sold to the workmen

for 5¾ cents. It is stated that this dinner actually costs 8 cents, and the company stand the difference, which amounted in 1899 to over $5000.

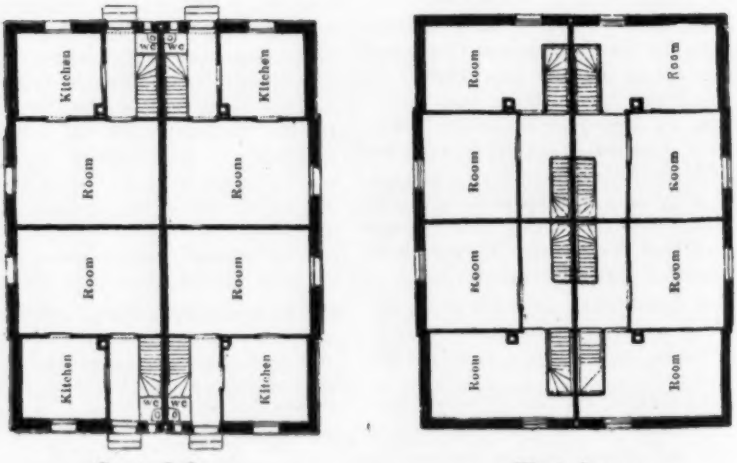
The factories are airy and well ventilated, and all possible means adopted to prevent accidents and avoid unhealthful conditions. In some parts of the factory, the work is carried on with a very high temperature, and here coffee is supplied free during work hours, in order to avoid the evil effects of the excessive drinking of cold water. Free baths are supplied, at which the color workmen are required to wash before leaving the factory. These baths are taken during work hours, and the workmen change their clothes when starting and leaving work, a place being provided for each one, where he keeps his work clothes and the clothing that he wears outside.

The workmen are cared for if sick.



Ground floor. First floor

Fig. 1.



Ground floor. First floor.

FLOOR PLANS OF OVERSEERS' AND WORKMEN'S COTTAGES IN GERMANY.

In addition to the "Sick Club," which retains doctors in the villages, to treat the workmen, there are three doctors, two assistants, and three nurses, appointed by the company, and a suitable building is provided in the factory containing a surgery and dispensary, where the workmen complaining of illness or meeting with accident can be treated. Previous to 1884, when workmen were rendered by illness incapable of working, they received sick

COTTAGES FOR OVERSEERS AND WORKMEN IN GERMANY.

pay from the company, which, in the case of married workmen amounted to 21½ cents, and in the case of unmarried workmen 14⅓ cents per day. This arrangement was displaced in 1884 (owing to the passage of the law as to insurance of workmen against illness), by a sick fund, to which the workmen themselves contributed.

While the percentage of consumptives among the employees of the Badische Company is not above the average, yet the company has provided a home for consumptive patients, at Dannenfels, where the location is favorable, and every facility is here provided for treating this disease according to the most approved modern methods. The expense of caring for the patients at this home is provided for by the sick fund. One of the officials of the company has founded a convalescent home for workmen recovering from severe illness.

In addition to these provisions for medical aid to the workmen, the company has built a house provided with doctors, assistants and nurses, in which the members of the workmen's families receive free medical attendance. A free bath house for the wives and children of workmen who have been employed at least two years by the company, has been erected near the dwellings, where the water is heated to 96 Deg. Fahrenheit. The baths are very popular, in 1899 41,002 visitors availing themselves of this privilege, being at the rate of 137 baths per day.

A lying-in hospital has been provided for the free use of the wives of workmen who have been in the service of the company for at least two years. Two trained nurses are in constant attendance, one of them being a qualified midwife. In 1899, 169 patients were treated at this hospital.

Owing to the fact that domestic unhappiness is frequently caused by the housewife not understanding how to cook and care for her home, the company maintains a school for housekeeping for the wives and daughters of the workmen. Free cooking, washing, needlework, cutting, making and repairing clothes, and kitchen gardening are taught here, besides theoretical instruction as to the value of food stuffs, the nursing and caring for invalids and children, and household book-keeping.

A system of premiums for long service is provided for the workmen, by which those who have been in the employ of the company for five years receive an annual premium of about $6, which is increased for each additional five years' service, until the premium

reaches $24, which is paid after twenty years' service.

A benevolent fund has been established by the company, which is increased annually by a contribution from the net profits of the business. Payments are made from this fund to such sick workmen as are not entitled to support from the regular sick fund. This benevolent fund also contributes to the support of workmen's widows and orphans. An elaborate system of pensions for the officials of the factory is maintained.

This is a very brief outline of the system inaugurated by the Badische Company, for caring for their workmen. It possesses the characteristic German thoroughness, beginning as it does with the birth of the workmen's children, educating them, housing them, providing food and recreation, and caring for them in sickness and old age. This elaborate scheme of assistance to workmen could probably have been developed in no other country as easily as in Germany, where the people have become thoroughly accustomed to a paternal government.

It is undoubtedly true that such a system implies heavy charges and pecuniary liabilities on the part of the manufacturer, and consequently it is essential for the success of such a system that the profits of the business should not only be large, but should suffer no interruption. These conditions are fulfilled in the manufacturing of coal tar colors, which has returned large profits to the manufacturers in every year since its foundation. In case of industries subject to such ups and downs (mostly downs), such, for instance, as the textile industry has experienced, it would be impossible for such an elaborate and expensive system to be maintained for any considerable time. It would be folly for a manager of a business as speculative and uncertain as the textile industry to incur the heavy charges and financial responsibilities involved in such a social scheme. When dull times come on and the manufacturer is forced to resort to every possible economy to make both ends meet, the natural impulse would be to cut down the expenses connected with this co-operative system, thus destroying its usefulness and bringing it into disrepute.

At the present time, there are a number of textile mills in the United States endeavoring by similar social experiment to promote more harmonious relations and a better feeling between employees and their employers, as well as among the employees themselves. It is in the South that this idea has the strongest hold. Many of the mills there have provided schools, teachers, churches and libraries at the expense of the mill corporation.

The Eagle & Phoenix Club, of Columbus, Ga., is an interesting example of a club supported by a textile mill. Its membership is confined exclusively to the operatives of the Eagle & Phoenix Mills. The dues are nominal, being only 15 cents per month, and male employees over fourteen years of age are eligible for membership. The money obtained from the payment of dues is used exclusively for entertainment and recreation. These entertainments are held weekly, and consist of dances, suppers and the like, to which the female portion of the families of club members are invited. Any deficit in the finances of the club is made up by the Eagle & Phoenix Mills.

There is a lyceum course connected with the club, consisting of instructive lectures, practical experiments in electricity and chemistry, illustrated lectures on travel, vocal and instrumental music, etc. Admission is free, three tickets being given to each member. Of these tickets, one-half are of a different color, and admit only females, the aim being to have the attendance equally divided between the sexes.

The library, while general in character, contains especially the books that treat of sanitary regulation, nursing, cooking, mechanics, textile work, and other subjects calculated to interest and benefit the people of the community. A reading class forms a feature that is particularly good. A

good reader is selected, who reads books of travel, humorous works, or other selections calculated to entertain and instruct people not accustomed to reading. The subject is explained to the hearers, and in this way the habit of reading is encouraged.

Free classes in mathematics and the elementary branches of education meet three times a week. A musical director is engaged, who gives lessons three times a week, and a physical instructor is regularly employed. Free bathrooms provided for the members are well patronized. One story of the club building is devoted exclusively to games, such as bowling, pool, billiards, checkers, cards, dominoes, etc. The managers of the Eagle & Phoenix Mills are convinced that this club has a very beneficial effect upon the relations between the company and the operatives.

Another example of workingmen's clubs is found at Yonkers, N. Y., where the Hollywood Inn is being conducted for the benefit of the townspeople generally, and while owing its existence to the generous gift of W. F. Cochran, of the Alex. Smith Carpet Company, it is entirely independent of that company. Its features have been studied by many interested in the organizing of such associations, for it is certainly the model institution of its kind in America. This club was formed several years ago by a number of public-spirited and wealthy men, who desired to provide the working people of Yonkers with a substitute for the saloon, which was then, and is still in most towns and cities, the only social club which the workingman has.

The dues are nominal, but $3 a year, or less than one cent a day, and the deficit is made up by the patrons of the enterprise. A fine building was constructed, and provided with social and smoking rooms, where music, games, and the daily and illustrated weeklies are provided. There are also billiard and pool rooms, a bowling alley and well equipped gymnasium under the care of an instructor, bath rooms, and a fine assembly hall, where entertainments and lectures are a regular feature.

There is an employment bureau, which aids members in obtaining work. The Hollywood Inn Club aims to attract the men of Yonkers and vicinity, by offering them opportunities for reading, recreation, companionship, and physical training. The club has a seven-acre field, with running-track, baseball and football grounds. This club is in a very flourishing condition, having at present over one thousand members, and exerts a powerful influence for good. There is no trace of paternalism in its management. The members elect their own governing committee, and plan and arrange their entertainments and classes.

The success of Hollywood Inn, like every other undertaking of this nature, as well as of a business character, is in the personal element which guides and directs it, and Hollywood owes to its vice-president, Mr. James E. Freeman, in a large measure its existence and present success. It was he who first interested Mr. Cochran and others in the work, and whose wise plans have overcome the many prejudices which usually exist on the part of the workingmen themselves against such work intended for their benefit

At Dayton, Ohio, there is an industrial project of this kind which so far has been successful, and promises well for the future. Among other experiments of this character that have been attempted in this country, one of them, and perhaps the best known, is that of Alfred Dolge, at Dolgeville, N. Y., himself a German, actuated by high philanthropic motives. He brought together a population of about 3000, supported by his industries, and carried on for many years a system similar to those we have just described. When business conditions became adverse during the dark years following 1892, he found the charges thus created to be a serious burden. While his failure was in no wise due

to these charges, another illustration was afforded of the fact that such co-operative schemes can exist only in the sunlight of uninterrupted prosperity.

The well-known experiment at Pullman, Ill., failed for other and well-known reasons. It is interesting to note that in this latter case, a strong antagonism to the social scheme was shown by the workmen themselves, and investigation might reveal the fact that there is a natural opposition to certain features of such social experiments on the part of the supposed beneficiaries. A French writer, speaking of the social features of the great Krupp Iron Works, refers to the strong opposition shown towards the scheme by the workmen there.

A profitable business is, however, absolutely necessary for such experiments. For this reason, they will necessarily be limited in their application, but they teach many valuable lessons, and undoubtedly have done great good to both employer and employee. They form an interesting phase in the evolution of industrial methods, and merit careful study of all interested in the great problems relating to employer and employed.

HOLLYWOOD INN, THE WORKINGMEN'S CLUB AT YONKERS, NEW YORK.

—Designers of textiles for the Turkish market, in addition to skill and taste in the combination of colors and making of designs, must also be informed as to the rules of the Mohammedan church. The Koran forbids the representation of all animal or vegetable life in any drawing or decoration, and goods having such designs are liable to be seized and confiscated, if found in the possession of Turkish subjects.

Mill Discipline.

Editor Textile World:

I would like to express my appreciation of the article on "Mill Discipline," in the December number of the Textile World. The writer is an A No. 1 sensible man. If the principles laid down in the article were to be carried out more generally than they are, there would be from 20 to 50 per cent. less changes of overseers and superintendents than we have today. Competent men would hold their places by hard-earned merit, and not feel afraid of being displaced at the whim of those in authority over them, who will put in a green man at a dollar a day less, who "will do just as well," and then think they are saving money for the firm. I think, also, that the ideas carried out would be a death blow to 90 per cent. of the pernicious system of "favoritism" that is practiced in so many mills, and that would be a great gain, especially for the owners. The last paragraph ought to be printed in gold ink and a copy put in the hands of every mill owner in the United States.

Wishing you the Compliments of the Season and a new era of prosperity for the Textile World in the New Century, I remain, Yours truly,

MANUFACTURER.

"HURRICANE" AUTOMATIC DRYER FOR WARPS, TU KISH TOWELS AND CLOTH.

Labor-Saving Improvements in Drying.

The Hurricane dryer shown in the accompanying illustration is a two-section machine, but these machines are built in various lengths and widths, the capacity varying from 500 lbs. to 15,000 lbs. per day.

Many objections have been raised heretofore, on account of the tendency of some machines to gloss the fabric, but when it is desired to avoid this appearance the rollers are built of wooden lags secured together in a strong and very substantial manner.

As the machine is built in sections, it is possible for a mill to install a dryer of moderate size, and afterwards increase its capacity to a considerable extent by adding one or more sections without requiring practically any more labor to operate the machine. As all of the rollers are driven positively, the cloth is subjected to no strain whatever during the progress of drying, and the rollers are also proportioned so as to allow for the shrinkage of the fabric as it dries.

Several strands of the material may also pass through the dryer automatically, at one time, as the rollers can be made of sufficient width to allow this.

The cloth enters the dryer near the top and after passing over the first roller, it travels down and over a second roller located near the bottom of the machine, then up over another roller near the top of the dryer and so on, so that by traveling up and down in loops, the cloth passes forward toward the delivery end of the machine.

Steel blade fans are used to recirculate the hot air in large volumes alternately through the wet material and the steam coils, but a small opening is provided so that there is a constant discharge of the moist air. The drying atmosphere is thus maintained at an economical point, and it is claimed that the greatest amount of drying is obtained with the least possible consumption of steam. Another very acceptable point from the standpoint of insurance, is the fact that the heating coils are not located underneath the material, but in a separate compartment at one side of the dryer, thus making them also very much easier to clean and repair.

Compared with older methods in use, this system it is claimed, has frequently saved from 40 to 75 per cent. in the item of labor alone. This machine is receiving wide attention. It is well adapted for carbonizing cloth, and the importance of the machine being divided into compartments can be readily appreciated, when it is remembered that the temperature can be governed independently in each compartment, thus rendering it possible to prevent the moisture from one compartment from interfering with high, dry, baking heat which is most essential for carbonizing.

The "Hurricane" Automatic Dryer is a very compact machine the builders state, it is also a most economical one. The drying of such materials as Turkish towels, circular-knit cloth and warps, has required so much floor space that the manufacturer has been required to give considerable thought to the arrangement of proper means to accomplish the drying of any quantities of these materials.

The Philadelphia Drying Machinery Company, 6721 Germantown Ave., Philadelphia, Pa., make a specialty of this class of automatic drying machinery and will be pleased to give any further information to interested firms.

—It is reported that the Vesta Mills, of Charleston, S. C., where during the past few years an experiment has been carried on in the employment of negro labor in cotton manufacturing, are to be removed to Gainesville, Ga. One of the reasons assigned for the change is, that it is believed that the white labor at Gainesville, Ga., will be more efficient than the black labor at Charleston. Manufacturers cannot be expected to be philanthropists, and as long as there is an ample supply of white labor, and it is more efficient than the black labor, mill owners will not employ the latter; but it is a mistake to assume that the negro will never become a proficient mill operative, simply because one or two experiments in this direction have been abandoned at the beginning of the twentieth century. Evolution is a slow process. Cotton goods have been manufactured in this country for over a century, and yet it is only

within a few years that Southern white labor has been utilized in the industry to any great extent. As a matter of fact, failure followed the first attempts in this direction. The President of the Vesta Mills is reported as saying:

"The principal cause of our failure at Charleston lies in the fact that we had no control of the operatives outside of the mill. The public may say that the Negro as a mill operative is a failure, but I don't believe it. I am firmly of the opinion that a cotton mill corporation located in the country as most of our mills are, with tenements owned and controlled by the company, can operate successfully a mill with colored labor. I came to this conclusion because there were a number of Negro operatives in every department of the Vesta Mill that were as efficient as any help."

New Bedford Textile School.

The trustees of the New Bedford Textile School have bought 7324 feet of land at the northwest corner of Maxfield and Purchase Streets, with the buildings thereon, consisting of the Bristol Hotel and five stores. This land joins the property of the school on the north, and now gives the Textile School Corporation a frontage of 185 feet on the main business street of New Bedford, besides the advantageous location of a corner lot.

For some time the contemplation of future extension of the plant by the establishment of new departments, such as dyeing, chemistry, bleaching, finishing and other branches of textile manufacturing have been under consideration.

All the available floor space in the present building is now occupied by machinery and equipment, and the management has had its resources taxed to meet the large attendance of students in many departments, and the property, as above stated, has been purchased for the sum of $13,800.00 to provide for further extension.

It has not yet been definitely stated what immediate use will be made of the property, but the probabilities are that a portion of the land will be built upon at an early date.

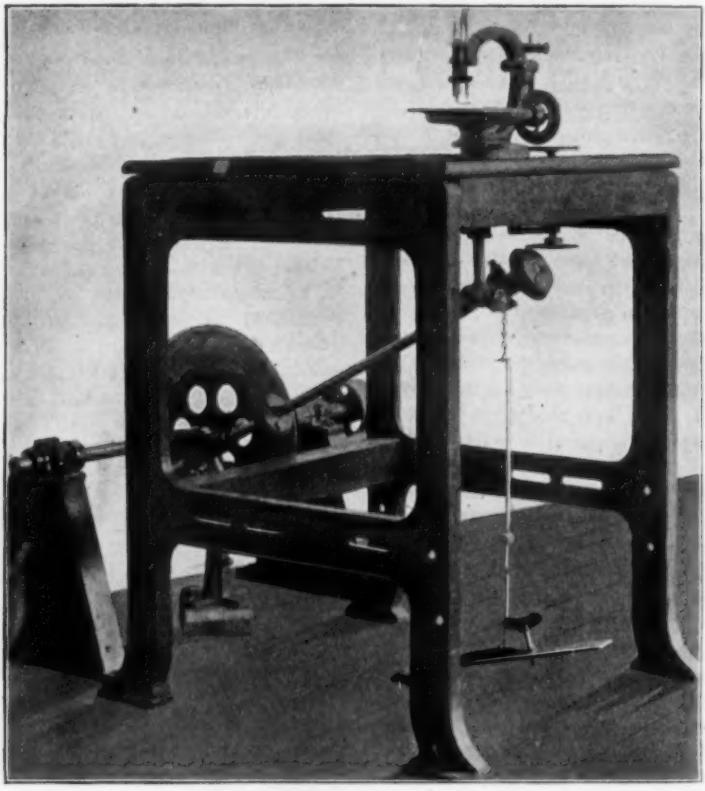
The policy of the directors of the school in making a specialty of cotton manufacturing and perfecting this department before adding others, has been very successful, and the time has now arrived when other departments can be added with every prospect that they will be as satisfactory and well attended, as the present departments of carding, spinning, weaving and designing.

—For some time there has been complaint from cotton manufacturers in the Carolinas that the freight rates on cotton from points in the South to their mills, were actually higher than the rates from the same points to cotton mills in the north. In other words, the nearer the mill was to the cotton fields, the more it cost to get the cotton to the mill. Last September the Southern Railway reduced the rates to points in the Carolinas, and the new rates met with strong protest from other railway lines. Arbitrators who were appointed to adjust these differences, have made their report. While the rates made by the Southern Railway, have not been adopted, the new schedule makes important concessions to the just complaints of the mill owners. As compared with the old rates previous to Sept. 1900, the new schedule to Charlotte, N. C., and Greenville, Spartanburg, Pacolet, Piedmont, S. C., shows reductions varying from 5 cents from Decatur, Ala., to 22 cents per hundred pounds from Grand Junction, Penn.

—The past year has been a hard one for manufacturers of and dealers in silk goods, and the discouraging results of the silk goods commission business has been followed by an unusually large number of changes in the heads of departments. The manager of a department in a commission house is judged by results to a large extent, and a bad year is generally followed by numerous changes.

The New Overrocker Transmitter for Running Sewing Machines Without Belts.

This device, shown in the accompanying illustration, is for the purpose of transmitting power to sewing machines, and dispenses with the ordinary pulleys and belts. It is very simple, compact, and easily adjusted. The shaft shown in the rear of the illustration extends the full length of the sewing machine tables, and a transmitter is attached to this shaft opposite each machine.



OVERROCKER POWER TRANSMITTER.

It consists of a disk fastened to the shaft, and driving a smaller disk attached to another shaft extending to a point just below the sewing machine where another pair of friction pulleys is provided, one of them on the shaft just below the machine, and the other on the machine shaft. The first named shaft is adjustable, and the front end is connected with a treadle, so that the operator can quickly and easily start the machine by applying pressure to the treadle with the foot; the machine stops as soon as this pressure is relieved.

One advantage which this device possesses over the ordinary pulley and belt arrangement, is that the speed of the sewing machine can easily be altered, by moving the small friction pulley which is driven by the large pulley so as to come in contact at a different point. In this way, the speed can be varied from one to four thousand revolutions per minute, without changing the size of the pulleys.

The transmitter does not run when the sewing machine is not in operation, and the direction of the speed can be altered by changing the small friction pulley from one side of the larger pulley to the other. This device is manufactured by Allen & Overrocker, 2421 Mascher Street, Philadelphia, who will furnish further particulars in regard to it.

Foreign Notes.

—The conditions in the cotton and linen markets of the world bear a striking resemblance to each other, as is shown by the following from Flachs und Leinen of Frautenau, Austria. The situation in the flax and linen industries cannot be stated more clearly than by quoting from the official report on the Brelan and Frautenau flax markets, as follows: Stagnation in the home markets and shrinkage of exports; these are the principal features; the extraordinary advance in prices that the spinner has been forced to make has brought business to a standstill; the prices on same grades of yarns have advanced 60% since last summer, while it has been impossible to sell linen cloths at anything approaching such an advance. Avoiding a loss is for the manufacturer an unattainable ideal. A profit is out of the question. The consequences so far have been an extensive curtailment of production, especially in the hand woven goods. A crisis is impending.

—The "Pall Mall Gazette" says there is scarcely an employer of any importance in connection with the lace trade of Nottingham, no matter what may be the branch, who has not lost some of his best hands through Dr. Dowie. The doctor, or his agent at Beeston, has known whom to choose, and will relieve Nottingham of none of its inferior labor. The manufacturers state that the wages offered to those who have gone, or are about to go, were such as they could not afford to pay unless they desired to figure in the Bankruptcy Court.

—The expenses incurred in connection with the recent Valleyfield, Canada, riots, amounts to $4000, and includes the pay for the volunteers, who were allowed fifty cents a day while on duty. In incidentals the cotton company spent about $1000, and besides this the company estimates its loss by the strike at between $4000 and $5000. The Government will pay the legtimate expenses and endeavor to collect the same from the town council.

—Very unsatisfactory results in the coloring of aniline black frequently accompany the use of such oxidizing agents as the bichromates and iron salts. The Deutsche Farber Zeitung recommends the use of a solution of bichromate containing from one to two per cent. of aniline salt. The use of this easily oxidized salt seems to facilitate the oxidation of aniline black without impairing the color.

—An explosion in an artificial silk manufactory near Zurich, calls attention to the fact that this industry has not only been actually established, but that it is attended by considerable danger. The accident was caused by a fire in the reeling room, arising from spontaneous combustion of the material in process, and followed by an explosion. One hundred and twenty hands were employed in the mill, 30 of them being in the reel room, and 13 were more or less seriously injured.

—The French Department of Labor has issued a report on the effect of the reduction from 12 to 10 hours in the working time in silk filatures, which occurred in 1892. It states that under the 10-hour system, the average production of a bassine is 10¾ ozs. of silk per day, as compared with 8¼ ozs. under the 12-hour schedule. The daily wage under the 12-hour system averaged 20 cents per day, while it has risen to 30 cents under 10-hour schedule.

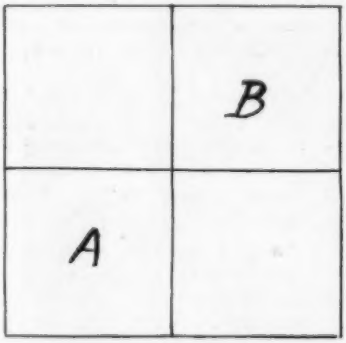
COTTON DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Art of Sketch Making.

S. T. L.

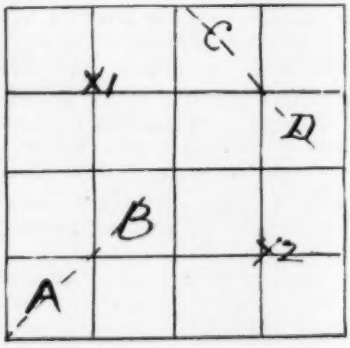
While looking through some text books on textile designing, I was very much struck with the absence of any practical demonstration on the subject of making sketches. Three of the best text books refer to cases where when copying a pattern, there is only a small portion of the full repeat of pattern.



PLAN 1.

Much judgment is always needed, and unless the person possesses considerable skill and artistic ability, he can go no further. Most of the patterns going nowadays require a trail ground (besides the set figures), to introduce a second effect. It may be for instance a 3/1 twill, hopsack, or lace-working trail, or anything that for the time being is taking the public fancy. Although these can be put in haphazard, and sometimes look exceedingly well, it is better as a rule, to have a system whereby you can ensure a more even distribution of trail, one easier to take stock of to prevent barry or stripy places, besides being able after a little practice to make their production an easier matter.

We will begin by showing how to work up sketches for any patterns that are short of a repeat, taking one of the positions which are about to be described that seems most likely to have been used originally in that way.



PLAN 2.

It will be as well to begin by explaining the sateen and other first positions that are used to build the sketch on. Supposing all the patterns described are going to be woven in a 60's set Bradford harness, 304 engine; it will stand on 60's set = 66 ends per inch, and 66 into 304 = just over 4½ in.; this in worsted goods will probably shrink to 4 in.; for this tie-up all sketches will be 4 in. or something that will divide equally into 4 in., according to size of figure, quantity of ground required, etc.

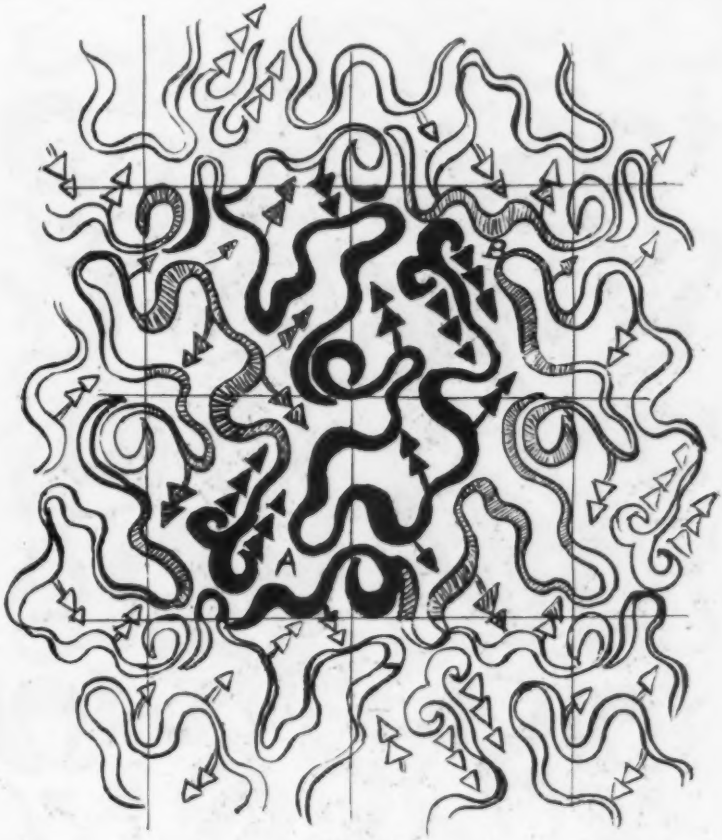
THE TWO POSITION ORDER.

Take a sheet of paper and rule two parallel lines with a space of 4 in. between. Divide these spaces into two equal spaces of 2 in. each, draw your figure in the centre of the first space, next take a tracing of this on ordinary transparent tracing paper and turn it upside down; place in the centre of the second space and at the distance you think will look well and rub it on.

I might state that for the advantage of those not used to working tracing paper that the best and sharpest way to use it is to place it on the first figure; trace the figure in turn with pencil mark, and rub the back of tracing paper with the back of a pen knife in which way a good many impressions can be secured.

It is most advisable to use one tracing for each way up of the figure as, if the tracing is penciled on both sides, the action of the back of the knife is liable to smear the copy.

Measure from the extreme top of A, sketch 1, to the extreme top of B; twice this length will give the length of one repeat of sketch, in this instance 4 inches. It is always advisable in all cases to repeat the figure on both sides to show where the repeat comes. The next point to consider is the trail; this is drawn in from A, and put on so that it can be traced from B, a very little practice teaching where to draw the trail



SKETCH 1.

without infringing on the space the trail will occupy when reversed. When you have drawn in what will nearly fill one-half the space, take a tracing of it, reverse from B; then join these, look the sketch over to see if there are any faulty places. If there are, alter, taking care to alter in both places; then rule the sketch round about ½ inch or 1 inch outside the repeat line, at the same time prepare the other side for copying in the repeats.

In all sketches made for dress material, care should be taken to have some of the figures turned upside down for the following reason. When the dressmaker is cutting up the material, she finds that there are (particularly in the skirt) a number of pieces more or less trianglar in shape,

SKETCH 2.

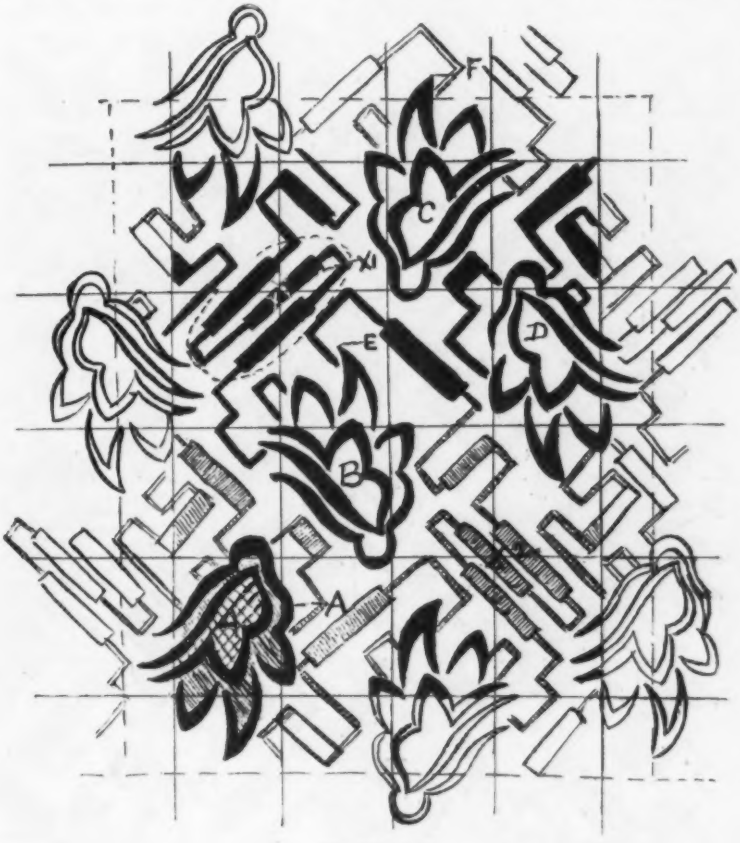
paint inside this with India ink or any other convenient color and clean up the work, rubbing all the tracings out that are outside this outside line.

In tracing the trail, it will perhaps be better to turn the tracing over, running over the lines with a pencil instead of rubbing in with pen knife which will leave an impression, and and of such a width that she cannot cut two side by side without cutting one with the broad end coming against the narrow end.

It will at once be noticed that when the tops are brought together, in one piece, the figures are all pointing upwards, in the other all downwards; that is if the figures have all been

kept one way up in the sketch. In a case of this sort, the dressmaker has nothing to do but use a whole width for one, thus using more material and making the dress more expensive without any material advantage.

This may seem a very simple thing, but it is far from it, in fact some of the older manufacturers won't look at



SKETCH 3.

a sketch that won't reverse, unless it possesses some extraordinary beauty of effect that would be spoilt by turning it upside down. So whatever positions you choose, if it is a figure that would be noticeable, always try and get them in the way described. The finished design is shown in sketch 2.

THE FOUR POSITION ORDER.

This order is also a favorite. It is more advantageous to use it when the figure plays an important part in the sketch, as there are four positions of the figure before there is any repeat; first get the 4 in. spaces ruled out as before, then divide into four spaces of 1 in. each. Put the figure A, sketch 3, in the centre of first space in the left hand corner; take a tracing and place B upside down in the centre of the second space at suitable distance, always bearing in mind the amount of space you wish to have for the trail; the farther you remove B from A the longer you make the sketch, the length of the sketch being, roughly, about four times this distance.

Next take these two figures, A and B, as one set figure, and reverse them, that is, turn them over (not upside

down) as Fig. C D in sketch 3, putting them in so that they come rather closer between figures B and D than they do between A and B, thus throwing them slightly out of the dead 4-end sateen order and giving C = 2½ in., or 5 in. in one full repeat of sketch. Trace in the repeat figures on all four sides; the repeat of A being copied as far over the last line as A is over the first; the same with D, the repeat of it being copied as far

SKETCH 4.

them a more all-over appearance than they would otherwise have had.

The distance between any portion of Fig. B and the corresponding portion of Fig. C will be just one-half the length of the repeat of the sketch; in this instance from point E in Fig. B to the corresponding point F in Fig. over the first line as D is inside the last; the repeat of C being brought down of course 5 in., as calculated.

The sketch is now ready for the second effect, which I will now show how to put in to the best advantage. Place an X in a position that comes exactly central between the figures

A and B one way and C and D the other way as X1, sketch 3 and plan 2; then measure half way on and half way down one repeat of the sketch, and mark X2; now if this has been done correctly X2 will also cut in between figures A and B across and C and D downward. Take the heavy or principal portion of your trail, and place it on the sketch with X1 as its centre; draw your trail to cover one-half as in previous example, taking care not to intrude on the space that the trail will take up when reversed.

Next take a tracing of this and, if all the figures have been twisted as advised, it will be found to fit exactly in the heavy portion of trail, coming exactly over the X2 which is equally distant from X1; now join up, and after filling the repeat spaces with trail, look carefully for any faults, and if any alterations are necessary, take care to alter in all places; next draw a line enclosing a bit above one repeat, as shown by dotted lines, to show that the pattern joins properly: paint in and clean up. The finished sketch is shown in sketch 4.

Cotton Mill Practice.

Among the many enquiries reaching us, there have been several relating to the speed and production of cotton combers, the best number of wire and points per square foot to use on cotton cards, and the best size of spinning rings for different sizes of cotton yarn. We present below the views of a number of practical men, on these questions, and should be pleased to hear from others in regard to them.

The speed of cotton combers will average about eighty nips per minute on Egyptian and Sea Island cotton, with an average production of 15 pounds in ten hours. There should not be over seven per cent. of waste. The speed should be reduced on inferior grades of cotton, with a corresponding reduction in production.

DANIEL.

My experience as a cotton carder and comber teaches me that the comber should run from eighty to ninety beats per minute. At present, I have all of my combers running ninety beats per minute, on Peeler, Egyptian and Sea Island cotton. The weight of my laps on Peeler and Egyptian is 290 grains per yard. The waste is about 18 per cent. of the weight of stock supplied to the comb. The production of one comb with six deliveries, in fifty-eight hours, including time lost by cleaning and the necessary stoppages, averages 340 pounds of finished combed work. The weight of the lap on Sea Island cotton is 200 grains per yard, and the production of one comber with six deliveries, averages about 230 pounds of combed stock per week of fifty-eight hours. Where there are combers enough, I would prefer to run the machines eighty-five beats per minute, as it is my experience that better results can be obtained at this speed than when the machines are run faster.

OVERSEER.

Practical experience has demonstrated that 85 nips per minute on single nip machines, and 120 nips per minute on double nip or duplex machines is the most efficient speed at which to run a combing machine.

It is possible to obtain a good quality of combed work with higher speeds than the ones named, but if the repair bill and strength of the yarn produced is considered, the slow speed will be found the better paying one.

Practical tests have shown that the breaking strength of the yarn increases as the speed of the needles through the fibres decreases; and as the harsh jerking motion of a comber will not admit of a high rate of speed, any attempt to increase this speed which has been adopted as the standard for good combing, generally results in an inferior quality of yarn, a shaky comber and ruined needles.

The speed of the comber is never

changed but the production of it must be altered to suit the different conditions and stock, and this must be left to the good judgment of the carder, as the rate at which a comber may be made to produce depends not only upon its own condition but in a very great measure on other conditions wholly outside of itself.

If the stock is nippy and the carding is not up to the standard, the production will be less than when the stock is of better quality and the carding well done.

The quality of carding is a principal factor and good combed work cannot be had if the stock has been previously spoiled by overloaded or poorly adjusted cards.

A card can produce as high as 800 pounds in 60 hours, but it is not possible to run all grades of stock at that rate; a good rule to follow for combed work under average conditions, is to run 650 pounds in 60 hours for 50s yarn, and for every 10 numbers finer reduce 25 pounds on the card.

650	lbs.	per card for	50s	yarn.
625	"	"	60s	"
600	"	"	70s	"
575	"	"	80s	"
550	"	"	90s	"
525	"	"	100s	"

As the quality of the stock is an important factor, judgment must again be used in working out the problem of production both on the cards and combers. No set rule can be given for the production of a comber, but under ordinary circumstances we might find the following data of value for single nip machines.

On Sea Island stock for yarn running from No. 150 to No. 200, it would not be advisable to comb over 200 pounds in 60 hours. The lap in this case should be very light, say from 180 to 240 grs. per yard, but great care should be taken that the lap is not made too light, as this would not allow the nipper to hold the stock, and would result in an unnecessarily large amount of evil, while an extra heavy lap of this stock means ruined half laps and combs. Should it be undesirable to reduce the lap, the heavier one may be used and the draft of the machine increased.

On Egyptian 1⅜ inch stock for spinning from No. 60s to No. 90s yarn, as high a production as 420 pounds in 60 hours may be had with good results, this stock being very easy to comb.

On peelers 1¼ inch stock and spinning from 50 to 70 yarn, 325 pounds per 60 hours is considered a fair average of production.

On this class of stock, which is very nippy, as light a lap as possible consistent with the production desired, should be used, and a large amount of noil expected.

CENTRAL.

Size of Wire for Carding Cotton.

The production of cotton combers and the speed at which they should be run, depends largely on the manner in which the stock is prepared for the comb. I consider carding the best method of preparing in nearly all cases. Where a two-cylinder card is used, I would recommend a No. 28 wire on the first card, and No. 30 on the second. A good breast on the card is a great advantage. When carding for hosiery yarn, I have had good success by using No. 32 wire on the first, and No. 33 on the second breaker, and No. 34 on the finisher.

When a mill is manufacturing both fine and coarse yarns, it is impossible to select a wire which will be the best for each grade manufactured, and it is only when making a specialty of a certain quality and size of yarn, that the wire best adapted for the work can be used. Where nothing but fine yarns are made, the cards can be clothed to advantage with a fine number of tempered steel wire.

HOLLAND.

The wire on plain top and revolving cards should be No. 32. This is suited for quite a wide range of dif-

ferent numbers of yarn and qualities of stock. The same number should be used on cylinder, doffer, and tops, with the exception of Nos. 1, 2 and 3 tops of plain top cards; on these three I would advise a No. 28 wire, because they catch the first of the cotton as it comes through the feed rolls, and with coarse wire there is less danger of a jam. There are 43,384 points per square foot when No. 32 wire is used, and 34,560 points of No. 28 wire.

DANIEL.

On plain top cards, on breaker and finisher cards, the best results may be secured by using No. 100's on the cylinders, 72,000 points to the square foot.

For single carding, I would use on the cylinder No. 110 wire, 79,200 points per square foot; on the doffer, No. 120's wire, 86,400 points per square foot; and, on flats, No. 110's wire, 79,200 points per square foot.

For both medium and fine counts on revolving flat cards, I would recommend No. 120's wire, 86,400 points per square foot on the cylinder; No. 130's wire, 93,600 points per square foot on the doffer; and No. 110's wire, 79,200 points per square foot on the flats. These sizes and sets of clothing I have found to give very good results on the various grades of cotton for different sizes of yarn.

OVERSEER.

Best Size of Spinning Rings for Different Sizes of Yarn.

Let us first suppose we are running on a No. 28 warp yarn, made from ¾ or one inch staple cotton. The speed of the front roll should be 120 revolutions per minute. A ring 1¾ inches in diameter, and a bobbin ⅞ inches in diameter, with a 6-inch traverse, would, under these conditions, give the best results. The frame should be 2¾-inch gauge, with a 4-inch separator blade.

If we are to spin as high as No. 40 with same grade of cotton, a ring of smaller diameter must be used, say about 1⅝ inches. As the yarn becomes finer, a better grade of cotton must be used, and with suitable cotton yarn from 40s to 60s can be spun successfully with a 1⅝ ring and a six-inch traverse, on a ¾-inch bobbin. Yarns from 60s to 100s will require a ring from 1⅜ to 1½ inches in diameter. There are other things besides the size of the yarn that have a bearing upon the size of the ring; for instance, very soft twisted yarns require a smaller ring and shorter traverse than when the yarn is hard twisted. Large rings with a long traverse and small bobbin cause bad spinning, and greatly increase the amount of waste.

I believe that a mill spinning yarn from 30's to 60's should use 1⅝ rings and ¾-inch bobbins, and if finer yarns are wanted, it is very easy to use a bobbin ⅛-inch larger, which will give as good results as a change of the rings, and with very much less work. For medium counts, I prefer a No. 2 flange, but for fine work, a No. 1 flange ring gives better results.

The ring on a filling frame should be ¼-inch larger than the bottom of the cone on the bobbin. The yarn on a filling bobbin should be wound so that the size will be uniform from bottom to top, and not larger than the bottom of the cone. A 1½-inch ring is about right for yarn coarser than 30's, and for finer numbers, up to 60's, a 1⅜ ring gives good results. For still finer yarn, up to 100's, I would recommend a 1¼ inch ring. No filling frame should be less than 2¾ inch gauge.

RING FRAME.

—A French patent for weighting cotton fabrics consists in treating the goods in a solution of chlorcalcium standing 14° Be, and then in a second bath of Glauber's salt. While the goods are in the second bath, sulphuric acid is added. In addition to increase in weight, it is claimed that this process renders the cloth fireproof.

WOOLEN DEPARTMENT.

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Oxford Overcoating.

With the growing popularity of the Raglan, which has displaced to a large extent the ulster and the old fashioned overcoat, there seems to be assured a continued and large use of the Oxford mixtures for the present, and possibly the next heavy weight season.

The construction of the present overcoating fabrics upon the market, are so varied, and the outlook for quite a change from the fabric now in use is so marked, that it is quite impossible to give a detail of construction and weave that would be sure to be on the line of the coming cloth.

The writer has interviewed a number of agents handling these goods, and examined quite a number of samples of popular lines, with the result that, while they vary somewhat in lay out and weave, yet the general character of the stock and mixtures, as well as the finish, do not vary to any great degree. It may be said that whereas the last season was prolific with twills and diagonal effects, the tendency at this time seems to be toward a fabric showing no twill, with a face more on the order of a melton, and yet retaining the soft cheviot "feel" and finish.

Regarding the selection of stock, the wool should be on the cheviot order, and short in staple. If any shoddy is used, anything on the worsted order, that would give a wiry thread and lack fulling quality, should be avoided. While the goods do not require a very heavy felting, they should possess the felting quality to render the finish soft.

A medium staple pulled wool is very suitable, especially for the white in mixtures, and any desire to cheapen the fabric, should not interfere with the quality of this white; and if it is finer than the black, so much the better.

There are various shades on the market, ranging from a 2½ per cent. mixture to one containing 25 per cent. of white. A line of shades nicely graduated may run as follows:—2½ per cent., 5 per cent., 10 per cent. and 15 per cent. of white.

The most important matter regarding the mixtures, is the manipulation of the stock in the picker room. Oxfords are the most difficult to get evenly mixed when handled in the ordinary manner; but, by a special plan that should always be followed with mixtures of this character, the best of results may be assured.

In making a mixture of 100 pounds, having 2½ or 5 per cent. of white, first take 2½ pounds of white and 22½ pounds of black and run them through the picker; or 5 pounds with 20 pounds of black may be used; either method would result in a mixture containing one-fourth of the lot.

Now, by laying down this mixture, with the 75 pounds of black stock remaining, and running through the picker three times, oiling the second time through, the mixture will be about as uniform as it is possible to make it. It would be next to impossible to get the white evenly distributed by laying the small quantity down with all the black at first.

In making a 15 or 25 per cent. mixture, I would make the preliminary mixture about half and half of the black and white.

The layout and weave being determined, the detail of the work would not vary from that of other goods until it came to the finishing room. To

secure a 28-ounce finished fabric, the goods should weigh from 33 to 34 ounces from the loom, and should have about 16 to 18 inches to full. The fulling should be with cold soap, and care should be taken to avoid overheating, regulating the work to secure a moderate and uniform temperature.

The width from the fulling mill should be sufficient to allow the cloth to go on to the dryer without stretching, otherwise the width would not be retained through the dry finishing process.

We would advise that the width from the dryer be at least one inch more than the required finished width. As the finish does not call for any gigging, the cloth should be immediately extracted and dried after coming from the washer.

After drying, the cloth should be given three or four runs over the brushing machine, with a moderately hard application, and with a moderate steaming with good live steam. By this process all the fibres that are not thoroughly felted down will be brought to the surface, and the steaming destroys the hard, stiff feeling produced by the previous processes.

This steaming will tend to reduce the width to some extent, and it may be easily determined just what allowance should be made for it in the drying, and whether the one inch is sufficient.

The goods should now be backburled and passed to the shear. While there will be but little shearing required, this operation should not be hurried; while one or two runs may seem sufficient, it will be better to give a few extra runs after the blades are down to the finishing point, in order to give ample opportunity for all the fibres on the face to be brushed up, thus securing an even and uniform face, and avoiding the possibility of the goods roughing up in the wearing, as is often the case when the work is hurried.

Following the shearing, comes the specking, and a light brushing to clean the face before pressing. There is, among finishers, a diversity of opinion regarding how the cloth should be pressed for a cheviot finish. Some prefer running with the face up, thereby getting a less glazed effect upon the face, and requiring little if any steaming afterward; but, we would advise pressing with the face down. This gives an appearance to the face that seems far removed from the cheviot effect. The cheviot effect may be attained by after treatment, and a much more agreeable "feel" to the goods produced than in any other way.

Give them about the same pressure that other goods of the same weight would require, running them on to a roll. Possibly three or four pieces may be run on a roll together, after which they should be wrapped with heavy paper, and allowed to lay twenty-four hours, for the cloth to cool and the pressure to become set. It is a great mistake to hurry the work, so as to be obliged to open up and handle the goods while they are warm, as much of the good effect of the pressing is thereby lost.

After the cloth has laid the required length of time, it will be found that the handling does not destroy the effect of the pressing, and the steaming can be the more easily confined to the face of the cloth, and not be forced through, destroying a part of the pressure obtained.

After the cloth has been removed from the roll, as many pieces as can conveniently be laid down at once for steaming, should be sewed together, with a leader on the bottom or last piece, so they can be run through without interruption. Sufficient steam should be turned on to entirely destroy the glazed effect on the face of the cloth. A little experimenting will soon show the amount required, when the turns of the valve wheel should be noted, and a mark placed upon it, so as to arrive at the same results every time.

The steamer should be well covered with felt or several thicknesses of cloth, so that the full force of the

steam may be tempered, causing it to strike the cloth in a gentle, hot vapor, and not with a force that will penetrate the fabric.

After this process, the cloth should go to the inspector's perch, and then to the measurer and winder. The closeness of shearing, amount of pressure and final steaming should be subject to the good judgment of the finisher, which with the directions given should result in a well finished fabric.

ELMO.

A New Process for Rendering Woven and Knit Wool Goods Nonshrinking.

While the felting property of the wool fibre is utilized to good advantage in the manufacture of firm, durable fabrics, its tendency to shrink when in contact with soap and water is by no means desirable, after the fabric has been made into a garment. Fabrics of wool as heretofore made, will shrink more or less. The assurance of the merchant that the fabric "will not shrink" must be taken in a purely Pickwickian sense; the shrinkage is simply a question of degree.

For many purposes, the use of wool fabrics has been greatly restricted, owing to its tendency to shrink when once wet. A woolen garment may fit perfectly when new, but after being exposed to one or two showers it loses its shape, puckers up, and looks as if it were made for most anyone except the wearer.

Ladies can have silk skirts made which will not crimp at the bottom when wet, whereas woolen skirts invariably hang poorly. Children's and infants' clothing shrinks so much that a prudent housewife clothes the young members of the family with cotton flannel, when she would gladly have used wool. It is for the purpose of remedying this admitted objection to wool garments that an American chemist, Frederick Haigh, 660 East 23d Street, Paterson, N. J., has perfected a process which, it is claimed, renders wool fabrics unshrinkable. The process should be of much value when applied to woolen and worsted hosiery and underwear. We understand that the cost is very small, and we refer interested parties to Mr. Haigh, who would be pleased to give additional information in regard to the use of process.

Manufacture of Serges.

S. B. H.

In my last article I wrote at considerable length on the manufacture of serges of a very low grade quality, as practised extensively in Leeds, and throughout the Heavy Woolen District of Yorkshire. I was very much struck the other day by my attention being called to the greatly decreased consumption of wool among United States manufacturers, the substitution of cotton for wool no doubt having been greatly extended during the past five years. I am no pessimist, but shoddy and mungo as well as cotton, has become in recent years the principal foundation stocks for medium and low class woolen goods, while the use of the pure cotton warp in the production of men's and women's wear fabrics has during the last ten years increased by leaps and bounds.

The production of adulterants has become a science in Dewsbury and district, demanding skill and experience as great as in other departments of cloth manufacture. So perfect is the system of mungo manufacture that any quality and shade can now be made that the manufacturer may require, while the price per pound can be regulated to a nicety. Close observation on the part of practical ragmen has developed a succession of improvements in manipulation which have been accepted and further improved by enterprising machinists, until there is no difficulty in utilizing almost all waste products. Some classes of pulled or garnetted waste I saw sold a month ago in connection with the failure of a Bradford

house, at 26c. per lb., and was equal in value to certain classes of wools, and the very lowest wastes—formerly valueless—now command a price from 2c. per lb. upwards, and serve a useful purpose in the production of the cheapest classes of cotton warp serges and meltons. In fact, the best grades are re-manufactured several times over before finality has been reached.

To such an extent has this trade grown between Leeds and Huddersfield that the number of local wool merchants are considerably less than 15 years ago, and their businesses have greatly diminished. It is in perfect order to say that wool merchants have succumbed, and in their stead has arisen the rag merchant and mungo-man. Its competition with pure wool has even broken down the prejudice of some of the Scotch manufacturers, who, by its use, can now compete with those in Yorkshire at popular prices, and our Continental rivals are good customers for special classes of rags of fine quality.

We will now consider the production of medium and better qualities. Let the goods be woven as near perfect as possible, keeping out "broken picks," floats, smashes or traps; care being taken to keep the warp and listing threads in, and every other little detail which will naturally suggest itself to a competent weaver, and yet when the cloth is finished will show to good advantage in the piece. It is a common custom among makers of serges if the pieces are at all specky, burly, or bitty, to have them burl dyed or given a slight carbonizing, and while I am no strong advocate of carbonizing, yet the goods when dyed and finished should present an even, straight appearance, for if they show at all speckled, or mottled, it will be a serious drawback. Burl dyeing before the last dyeing process will prevent this.

Worsted serges form a staple product in the market. A good lay out is as follows: Warp: 2/28s, 40s quality, about 3668 threads, set 67 inches wide in the loom, woven with a six leaf twill. Filling: 1/10s, 60 picks per inch, reed 3/18s. This is a very nice cloth when smartly finished to 56 inches, and will weigh 21 ounces to the yard.

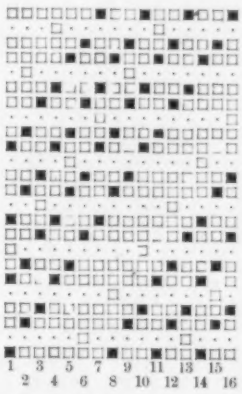


Fig. 1 is the weave for a good, cheap, serviceable overcoating of a purely serge character, and a cloth which has been extensively made. The warp used is spun from Egyptian cotton. Both face and backing weft are made entirely from waste products, without any addition of cotton or wool. Warp: 2/30s cotton, 2040 threads, 68 inches wide in the loom, woven on 16 harnesses straight draft. Reed: 2/15s. The face weft should be produced from a fairly good quality of crossbred waste or of cheviot rags, and spun to 8 yards per dram. The backing weft can be made out of very coarse serge rags at about half the cost in order to cheapen the fabric, spun 4 yards per dram, and having about 45 picks per inch. Mill and finish rough to 54 inches. Weight, 30 ounces per yard, and I can thoroughly recommend this as a good cloth for next winter wear.

Another good lay out for design 1 is as follows: Warp: 2/18s, 40s quality, 2580 threads, 72 inches wide in the loom. On 6 harnesses straight draft. Reed: 3/12s. Weft: 2/18s or 1/9s, 36 picks per inch. This piece

should be shrunk lengthways about 12½ per cent. in fulling, and finished 56 inches wide. Weight 21 ounces per yard.

Weaves for Use and Ornament.

GEORGE WASHINGTON.

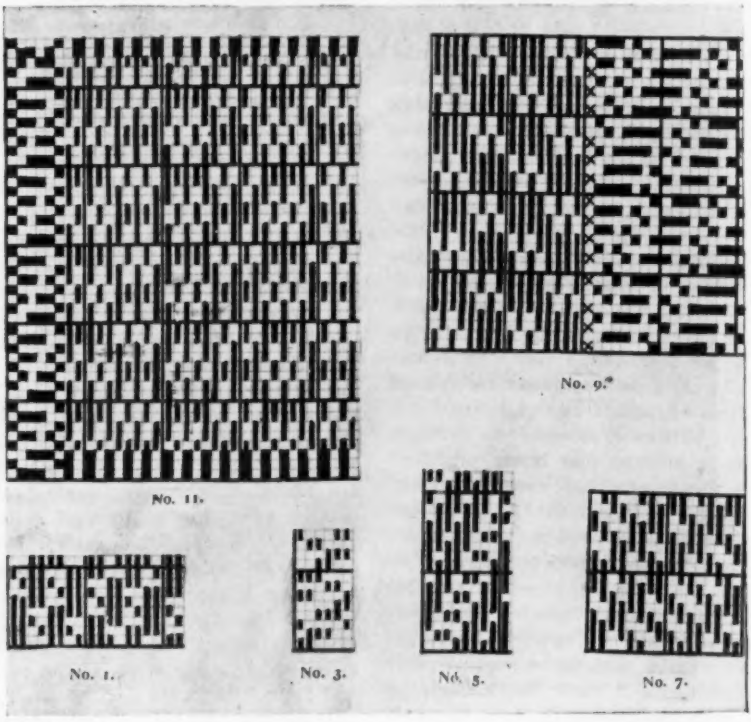
The object of these articles will be to illustrate the appearance and structure of fabrics made from one color of yarn, and therefore depending upon the structure of the weave for any ornamental features they may possess.

The plans are made with marks for the warp, and blank squares to indicate the filling; also, the actual number of threads and picks per inch in the finished cloth are given, not the setting in the loom.

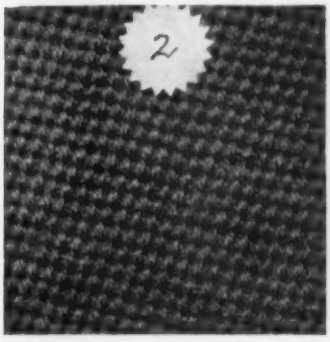
Fig. 1 is a weave composed of 18 threads arranged in pairs on a sateen basis; each pair of threads floats over five picks, causing them to stand out prominently on the surface; the filling does not cover more than two threads at one place, and therefore is depressed, and forms a hollow all round the long warp floats, thus separating them from each other, and gives the surface a lumpy appearance.

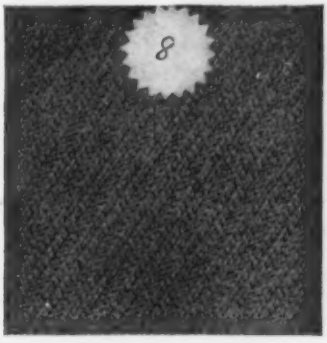
Weaves are said to be arranged on a sateen basis when each thread and pick of the weave are exactly alike, thus giving a very uniform and regular texture; the movement between one thread and the next is the same each time, and is also a number of picks that contains no common factor with the total number of picks in the weave, thus causing the threads to move to each pick in turn before occurring twice on one pick, so that a weave on a sateen basis is always complete on the same number of threads as picks.

Both common and sateen twills fulfill these two conditions, and are perfectly regular in structure; the differ-



ence between them is that common twills move only one pick for each thread, while sateen twills always move two or more picks between each thread.





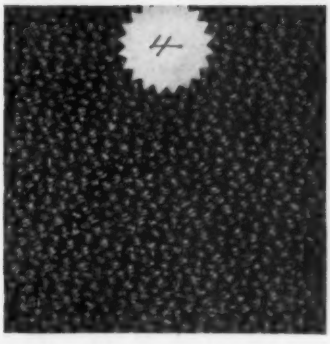


Fig. 1 is a combination of two sateen weaves arranged thread and thread. The long floats of warp commence on the first, fifth and ninth picks, in the first three pair of threads, therefore there is a movement of four picks between each.

Fig. 2 is a photographic reproduction of the fabric, and shows the regular manner in which the long, projecting floats of warp are distributed over the surface.

Weight of cloth, 21 ounces per yard, 54 inches wide; warp, 68 ends per inch, 2/18s worsted; filling, 68 picks per inch, 2/22s worsted.

The weave shown in Fig. 3 is a combination of two twills pick and pick, and it is interesting to note how each of the two simple weaves of which it is composed impresses its own peculiar characteristics upon the fabric, and also how it is modified by combination with the other. The $^{3}/_{1}$ twill contained in the odd picks of the design is responsible for the diagonal effect observable in the fabric, and running at a different angle from the original twill. The second weave which forms the even picks of the design, is a re-arrangement of the $^{3}/_{1}$ twill, which does away with the twilled effect, and gives it an all-over appearance. This weave causes the broken effect between the diagonals, and is more irregular than it would be if woven alone without combination with the straight twill. The two contrasting effects are clearly shown in Fig. 4, which is a photograph of the actual fabric. Weight of cloth, 20 oz. per yard, 54 inches wide; warp, 46 ends per inch, 2/14s worsted; filling, 44 ends per inch, 2/14s worsted.

The design Fig. 5 is also a combination of two twills pick and pick; viz., $^{5}/_{1}$ and $^{1}/_{3}$ common twills. As these weaves both run at the same angle, they combine in a very regular manner, and produce a weave entirely different from either of them. The long floats of warp form double warp twills which stand out prominently on the surface, and are separated by, and contrasted with, the depressed twills formed by the short floats of weft.

The greater number of threads than picks per inch in the fabric is calculated to augment the contrast, and bring further into prominence the warp twills, by increasing the difference in the length of the floats; the warp twills cover 5 picks, or 1/18 of an inch, while the weft only covers three threads, or 1/40 of an inch. Fig. 6 illustrates the appearance of the fabric. Weight of cloth, 15 oz. per yard, 54 inches wide; warp, 120 ends per inch, 2/40s worsted; filling, 90 picks per inch, 26s worsted.

The weave Fig. 7 is an alteration of a common twilled fabric to produce a diagonal effect, the twill is broken by floats of 4 in the warp, which form pairs of prominent warp twills, separated from each other by short floats of weft, and a series of small cross twills alternately. The warp twills stand out more prominently from the surface than is apparent in Fig. 8, because a front view does not show that variation of light and shade between the warp and weft that is seen when the fabric is held at an angle to the eye; the reason why the pattern shows so much more distinctly in some parts of a garment than in others, is because it presents the fabric at different angles to the light and the eye, and some of these angles reflect most light from the warp, others from the weft, while in some positions warp and weft reflect light equally, and therefore the eye can scarcely distinguish between them.

The fine setting of the warp also tends to bring out the contrast between the various twills in the design; the longest floats of warp are 1/20 of an inch, while the longest floats of weft are only 1/56 of an inch, or not much more than one-third the length of the warp floats. Weight of cloth, 13 oz. per yard, 54 inches wide; warp, 112 ends per inch, 2/40s worsted; filling, 80 picks per inch, 30s worsted.

The next design, Fig. 9, is a stripe pattern showing great contrast of weave effect. The first weave forms an indistinct hopsack or warp cord across the fabric, and stands out very prominently on the surface; this is due not only to the difference in the length of float, but also to the fact that two picks go into each opening of the warp in this weave, and there-

fore do not lay so flat as usual, but force the warp further from the centre of the cloth.

The second weave has a weft corkscrew face, the odd picks forming one twill, and the even picks the next one, so that this stripe has a weft face and also a decided upright twill which forms a pleasing contrast to the indistinct cord effect of the other stripe. Corkscrew weaves are usually woven on an odd number of shafts, but in order to get it on an even number of picks, and make it fit properly with the first weave, one twill is made rather larger than the other. The two extra threads marked with crosses in the design, are employed to make a marked division between the two weaves. Fig. 10 is a photograph of the fabric. Weight of cloth, 21 oz. per yard, 54 inches wide; warp, 136 ends per inch, 2/36s black worsted; filling, 104 picks per inch, 2/36s black worsted.

The design for a marked check pattern is shown in Fig. 11, which contains three different weave effects. The designer seems to have had considerable difficulty in making the weaves fit properly, and has missed three picks out of a weft cord, which is an 8-pick weave. The three picks of warp cord at the bottom of the design are skilfully joined to the ground weave, so that all the warp changes from one side of the fabric to the other, either after the third or fourth picks, thus making a clear cord across the fabric; the two picks at the top of the design while cutting with the bottom one, merge into the ground weave without cutting, and thus appear to be part of it in the fabric.

The 10-shaft ground weave is very effective, and is a modification of an ordinary cord fabric, with three cords merged into one at intervals. The fabric is clearly shown in Fig. 12. Weight of cloth, 18 oz. per yard, 54 inches wide; warp, 112 ends per inch, 2/36s worsted; filling, 108 picks per inch, 2/48s worsted.

—A process has been patented in England for treating silk and wool with a gun-cotton dressing, with the object of enhancing its hygienic value as clothing by utilizing the electrical properties of the gun-cotton. The silk or wool is impregnated with a solution of collodion or celluloid. Examples of the solutions used are one of 1 part of gun-cotton in 100 of Hoffmann's ether, and one of 1 part of cellulose tetracetate in 100 of nitrobenzene.

—The Belgian Consul in Pretoria, Transvaal, reports that blankets made of shoddy find large sales among the Kaffirs in South Africa. These blankets, called "koogs," are made at Dewsbury, England, and are from 64 by 68 to 72 by 84 inches in size, weighing 4½ and 5 pounds, respectively. They come in three different qualities and have broad red, yellow and blue stripes on both sides. The importation of these blankets during 1899 amounted to $370,000.

—The U. S. Consul at Edinburgh reports great depression in the Scotch tweed industry which is centered at Galashiels, Hawick and Selkirk. In the population of Galashiels alone there has been a decrease of 2000 since 1897. Foreign tariffs, popularity of flannel suitings, fluctuations on wool prices and foreign competition are the causes assigned.

—The Kolthoff Arctic Expedition has succeeded in bringing to Sweden a male and female calf of the musk-ox (Ovibos moschalus, Gmelin). As soon as the animals seem to be acclimatized they are to be set free in the northern mountain regions, where it is thought they will speedily increase in number. Great faith is professed in the future importance of the musk-ox, not so much as an article of food as on account of its thick brown wool, which is said to be remarkably strong.

KNITTING DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

Little of importance can be recorded in the market for knit goods further than the continuance of general conditions brought about by the high prices of raw material and the unwillingness of the purchaser of goods to pay a correspondingly advanced price for goods.

At this between seasons period, trade is naturally quiet. There is a good prospect which approaches a certainty that fancies will make up a large part of the business for spring and summer hosiery.

This demand for fancies, which is supplied to a large extent by Europe, has resulted in a scarcity of desirable goods, and the knitters abroad are correspondingly busy.

The attempt to adjust the market for goods to high priced raw material at one end and low priced goods at the other, resembles the efforts of a man to ride two horses, and has so far been accompanied by equally satisfactory results. The practice of substituting inferior grades instead of raising prices, has not succeeded in all cases, and there have been prices quoted in some quarters, which have been below the cost of manufacture.

This is by no means a healthy state of affairs. The policy of manufacturers to reduce stocks of yarn at the mill, has resulted in a large increase of stocks of yarn in the market, and a curtailment of yarn production.

This process of adjustment will doubtless in the end, equalize the inequalities which exist today between cost and selling prices of goods. The trade look for and desire no boom, but are confident that there will be a healthy demand for goods.

Sewing Machines in Underwear Mills.

MISCELLANEOUS MACHINES USED IN FINISHING KNITTED UNDERWEAR.

No. VI.

(Continued from January.)

There are various operations in the finishing of knitted underwear that are performed differently, and with different machines, according to the system or custom in force in the mills. Some of them will be treated under this heading. Some mills use for binding what is called a pearl edge binding, made in the mill by running plain binding of most any kind through a Union Special Single Needle Ornamental Machine, oftentimes called a binding machine. This machine is built on the same lines as their drawer finisher with certain minor changes, and with attachments for holding and guiding so that the pearl edge may be laid on in the middle of the binding as it passes through the machine. Oftentimes the machinist in the mill is ingenious enough to rig up an attachment for rolling up the binding as it comes from the machine. One of these machines arranged in the above manner, will, after being started, make the pearl edge on the whole roll of binding without attention of an operator until a new roll is to be started. The machine is as easily

taken care of as any of that company's finishing machines.

As drawer bands have to be stitched together, most mills have in their outfit a band stitcher. "Any old machine" seems to be pressed into service for this purpose, though it is preferable to have a two-thread machine. For this purpose, it is as often a Kruse & Murphy or W. & G. plain tension machine as anything else, and even sometimes an old line lock stitch machine.

A drawer strapping machine is important now, as many manufacturers are sewing on suspender straps in a durable manner with machines especially designed for that particular purpose. While straps have been sewed on with plain single, and double thread, chain, and lock stitch machines, it has always been apparent that a zigzag lock stitch was the most desirable. The "Standard" have a machine for such a purpose, and the Union Button Sewing Machine Company have a machine especially designed and adapted for sewing suspender straps on drawers and making stays and bars at required places in union suits and ladies' vests, which was fully described in the August number of the Textile World. It fastens the strap securely, rapidly and in a proper manner.

Zigzag machines have been used for several purposes after being adapted more or less to the work required such as sewing in gussets of drawers, such a stitch covering the raw edge nicely, besides sewing it on securely. They are sometimes used for covering the edge of the cloth left raw after running the necks. Sometimes a zigzag stitch is used with good effect on the facings of garments, or for making bars at intersections or parting of the seams on drawers, union suits, etc.

For covering the raw edge after running the neck, the Union Special Twin-Needle Machine makes a pretty ornamental stitch, as well as effectually covering it. It has two needles and one looper, leaving two parallel lines of stitching on the back and an interwoven fancy stitch over the raw edge, of either silk, worsted or cotton thread, as preferred. It is the same stitch as illustrated in the article on seaming machines in the November issue of the Textile World, made by a cylinder side-wheel covering machine, though the twin-needle machine, so called, for necking, is a regular flat machine. It is also sometimes used for catstitching, or wherever a pretty ornamental stitch is desired. Often it is called a "necking" machine.

Two-needle and two-line machines are often confounded. Two-line machines make two separate rows of stitching on both back and front of work, and require two needles, two loopers or hooks, and use four threads. Two-needle machines are by no means always two-line machines. For instance, the so-called twin-needle or necking machine has two needles, but only one looper, and consequently runs but three threads. The side wheel covering machine is similar as to needles, looper and number of threads. In fact, the covering machine is simply the twin-needle machine redesigned in the form of a cylinder machine to facilitate the handling of the work.

Two-line machines are used wherever it is desired to have a double row of stitching, as on the outside of the drawer band—covering the back seam of drawers with tape—sewing on each side of the tape simultaneously, being fitted with a device for holding and guiding the tape properly. It is familiarly called a taping machine. Wherever two-row work is required, two-line machines are desirable, because the lines of stitching are more likely to be parallel, more sightly, and the work turned off much quicker. Two-line machines are built almost any width between the rows, from 3/32 to 13/32 of an inch, special widths from 13/32 to 21/32 of an inch.

End sewing machines were formerly required, but where covered seams are made, and covered seams

are almost universal, none are necessary. Almost any zigzag machine fills the bill where such a machine is required, though there is a machine made especially for this purpose.

Hemming machines are little used for shirts or vests, at least on flat goods, rib tails, either looped or stitched on, taking the place of the hem. On ribbed goods, the hem is made on a machine designed for that purpose, which will be described later, but hemming is now giving way to edging machines. The Merrow Machine Company make a special feature of designing and building all kinds of edging machines, from a scallop or shell machine for fascinators, to a pretty fancy stitch edging for ends of sleeves and tails of shirts or vests. This includes machines for finishing the edges of bed blankets, horse blankets, or other fabrics in plain crochet, scallop or shell stitch, welt edge, and machines for producing shell stitch fascinators complete. Their machines and the character of their work is so well known that an extended description seems not to be necessary.

The Industrial Manufacturing Company, Camden, N. J., have desirable machines for overedging, overseaming and welting, which are becoming very popular. The Wilcox & Gibbs and the Union Special both build machines for finishing the edges, or at least the stitch of certain of their machines is peculiarly adapted for that purpose.

Eyeletting machines are necessary for setting the eyelets in the V in the backs of drawers and fronts of overshirts when lacings are used. If the system of using two straps with buttons sewed on the back of the drawer certain distances apart is employed, it does away with eyeletting. The old foot-power eyeletting machine is being fast displaced by power machines for setting metal eyelets. On many high class goods, eyelets are worked with silk on a machine similar to a button-hole machine.

Oftentimes an ingenious man taking care of sewing machines in a mill, will adapt a plain machine to one or more of the above purposes, especially when the mill is not turning off a large production, and therefore not using all of their machines all the time. Many of these contrivances are helpful to all concerned, avoiding trouble and annoyance with the machines, increasing production, and oftentimes reducing cost. If machinists in the mills were encouraged a little to devise means to facilitate the work of the finishing machines, more of them would contrive something here and there that would let the work go through more smoothly and faster, helping to avoid many of the minor matters in the finishing room so vexatious to all concerned.

MET.

(To be continued.)

Watch All Sides of the Work.

In knitting circular ribbed underwear, the great point that causes trouble is in the latches getting bent one side. When this happens, the holes begin to appear, and undoubtedly more seconds are made from this cause than from any other. Sometimes the latch is bent so that it will rip. When an operative has to look after five or six machines, she cannot see all sides of the work of all machines at once, and it is no uncommon occurrence to find a piece a yard or two long with a row of holes, or even torn, on the side of the machine away from the operative. A good stop motion should, of course, remedy this defect, but this is one of the hardest imperfections for a stop motion to catch. Operatives ought to be especially cautioned to watch the further side of their work as well as the side nearest them, and when the overseer or superintendent passes through the room, he should make a point of looking at that side of the work, for if there is bad work anywhere, it is going to be out of the operative's sight.

Skein or Cop Yarn.

The Hosiery Trade Journal states that of the many correspondents who have sent their opinions as to the comparative advantages of buying knitting yarn on the skein or on cops, all agree that the invoice weight of yarn on the skein can be more easily verified. One correspondent gives the following figures to prove the reduced cost of handling cop yarn:

100 lbs. 1/53s on cops	64.89
Cost of winding	1.34
Excess tare	.32
Waste 9 ozs.	.36
	66.91
100 lbs. 2/53 on skeins	66.91
Cost of winding	2.03
Waste 1¼ lbs.	1.17
	70.11

This shows a difference of 3⅛ cents per pound in favor of cop yarn.

Imperfect Knit Goods.

The article on seconds in hosiery, signed by "Foreman," confirms my views expressed in the June issue of the Textile World. It is a well known fact that salesmen representing cotton yarn mills, may have a lot of imperfect yarn (green goods), which must be sold to someone, and as it cannot be made perfect after once being spun, it eventually gets into some knitting mill to cause the trouble which "Foreman" and I have pointed out.

This yarn may have been made in a new mill, where the organization had not yet been perfected, or it may have been made in an old mill, where the carder is at fault. I do not blame the spinner entirely, as he has to spin the roving which the carder delivers to him. If the carding is irregular, the spun yarn will be irregular also. Yet, there are knit goods manufacturers who will fall into the trap which is baited with a low price placed on imperfect yarn. They purchase this yarn, and lose sight of the fact that they are injuring the standard of their goods. Instead of enlarging their profits, the purchase of such yarn results in a balance on the wrong side of the ledger.

Manufacturers have told me that they realize more from the manufacture of seconds than from perfect goods, adding that this was because they did not pay the knitter for the bad work. I admit that there is some force in this view, but it is not worth much consideration, because the knitters cannot be expected to work for nothing, and even if they did, the wear and tear of the machine, the ill temper of the operators, and the breakage of cams and needles, would go quite a ways toward off-setting the fancied gain by not paying the knitter.

In a mill trying to work imperfect yarn, the superintendent is hounding the foreman, while at the same time knowing that it is not the foreman's fault. He is bound to continue this hounding process, in order to hold his position. The overseer may be competent in every way, yet the discredit arising from the manufacture of so many imperfect goods rests upon him, although the real cause is the imperfections in the yarn as it is delivered to the knitter. A new overseer is engaged, but he does no better, and he has to go also, and so the mill muddles through the trouble, and the owners wonder why there is not a profit in the business.

FLEETWOOD.

An Important Patent Decision.

A decision rendered January 15th, in U. S. Circuit Court, Eastern District of Pennsylvania, by Judge Dallas, in the suit for infringement of the patent for improvements in knitting machines, granted December 29th, 1885, to E. R. Branson, is of great importance to the knitting trade owing to the fact that the patentee asserted a claim which practically controlled all the automatic picking devices used in modern hosiery machines.

The case, we are informed, was really a test suit, and if the patent

had been broadly upheld, so as to make the defendants infringers, it was claimed the result would have been a practical monopoly of all of this class of machines; this decision now relieves the defendants, and leaves the case of other machines to be settled on their merits in meeting the charge of infringement.

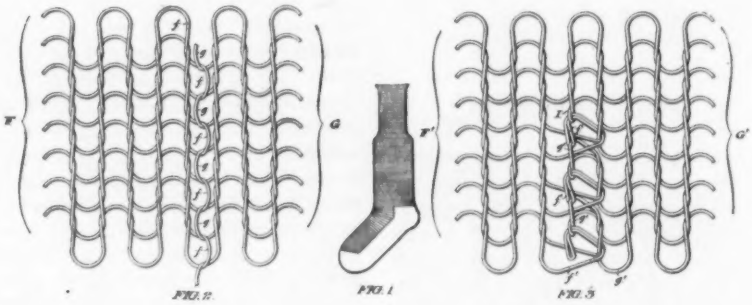
The suits were entered in 1898, against the Boss Knitting Machine Company, the Excelsior Knitting Machine Company and Paxton & O'Neill, who were thus singled out as practically the champions of the knitting industry of the country.

The stand they took in defence of their customers against what they believed an unjust claim, though involving heavy expense and a great deal of trouble, has been justified by the result of this exhaustive and protracted trial. The Court's decision concludes, "I am of opinion that the charge of infringement has not been sustained and therefore the bill will be dismissed with costs," so that users of the Boss, the Excelsior and the Paxton & O'Neill machines are now, under this decision, relieved from the threat of a demand for settlement of damages and royalties which hung over the users of machines in which the needles are actuated by pickers working on the needle butts.

Invention for Knitting Reinforced or Parti-Colored Stockings.

A method of knitting stockings by which any part, such as the bottom of the foot can be made with a different yarn from the upper part, has recently been patented.

The inventor in his specifications says: "I prefer to employ a machine which comprises two flat needle-beds disposed at an angle to each other and having a reciprocating carriage which actuates the needles and feeds the yarn to them. This carriage is capable of alternative methods of operation—that is to say, it may actuate the needles of one bed alone by a complete reciprocation back and forth upon that side and may then perform a similar function upon the needles of the other bed alone, or in making a complete reciprocation it may actuate the needles of one bed on its out-going movement and the needles of the other bed upon its return movement.



The two independently-knit webs desired in the foot portion of the stocking can obviously be formed upon such a machine and can be united by interknitting along their proximate edges, such interknitting being effected by throwing over a needle from that bed which for the time being is idle, and engaging a loop at or near the end of the web which is in process of formation upon the oppo-

site bed, this action being repeated at each end of the web during one complete reciprocation of the carriage."

It has been found, however, that where two yarns are employed, as in the case in knitting two distinct webs of this character, the union of said webs can be effected without interknitting wherever the change from one yarn to the other takes place.

This change of yarn is effected by causing the traveling carriage to drop one yarn and pick up the other at the termination of a complete reciprocation, and heretofore the two yarns have been entirely isolated from one another.

At the moment of such exchange, the yarn which has just been supplied to one row of the needles, is thrown across the yarn, which is about to be supplied to those of the other row, and thus intertwine the two yarns at the point from which the carriage starts. This intertwining of the two yarns unites the two webs without interknitting them, the line of union possessing a beautiful finish and being much less conspicuous than that formed by actual interknitting, while it is fully complete in all structural characteristics.

When this method of knitting has been carried on for the length desired for the composite web—say, for instance, through the foot and heel portions of the stocking, the transition is made to the alternative method, whereby a single tubular web is knit throughout the leg portion.

A stocking knit by this method is shown at Fig. 1. The toe and bottom portion of the foot are formed of white yarn.

In Fig. 2 the line of union between the two independently-knit webs F and G is shown, where it will be seen that the yarn *f* of the loops which compose the web F is intertwined with the yarn *g* of the loops which compose the web G by merely crossing the same.

Referring now to Fig. 3, which represents the line of union between the other edges of the independently-knit webs, it will there be seen that the yarn *f'* of the web F' is interknit with the yarn *g'* of the web G', such interknitting being indicated as extending from the bottom of the web up to the point I, above which the fabric is represented as being formed in a continuous and uniformly-knit tube instead of by the interknitting of separate webs. Such a change from the two webs to the single one of course occurs at the termination of the other line of union.

—The British colonies all over the world imported in one year goods valued at more than $1,000,000,000, and of this quantity $500,000,000 came from the mother country. India imported $300,000,000 of goods, $200,000,000 coming from England; Canada imported about $140,000,000, but only $34,000,000 came from the United Kingdom. According to the Canadian Manufacturer, Australia and the Australasian Islands imported in 1899 not far from $200,000,000, of which about $130,000,000 came from the United Kingdom. The British West Indies imported about $33,550,000—about $13,610,000 from England. The African colonies imported $130,000,000 taking $85,000,000 from the mother country.

Knitting Machines for Glove Fingers.

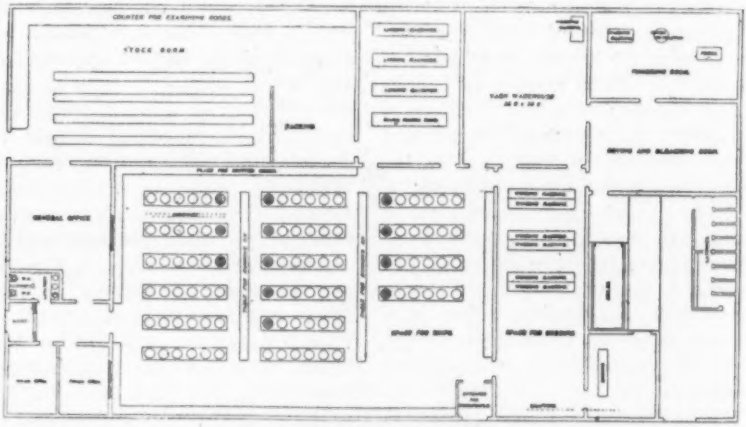
In many places, the floor space occupied by machinery is an important addition to the cost of machinery to the manufacturer, and this is especially true in large cities and towns, where land values are high. Realizing this fact, the Lamb Knitting Machine Company have recently perfected, and are now ready to furnish a small knitting machine especially adapted for knitting fingers on gloves. The bed has 3½ inches of needles, and the carriage is 20 inches long, which makes a saving of about 16 inches of space for each machine. This machine is built with the same regard

for workmanship and finish that has always characterized the Lamb machines. It is the only machine for knitting fingers now on the market, and the builders expect that it will be used by all knit glove manufacturers as soon as its merits are fully realized.

English Plan of a Hosiery Mill.

In a recent issue of the Textile World a plan for a hosiery mill was given, showing arrangements of rooms and machinery.

This plan excited considerable interest. The hosiery trade journal of England in its last issue gives a plan for a hosiery mill by an English firm and we reproduce it with the comments of the English journal.



PLAN FOR HOSIERY MILL.

"Starting from the yarn room the plan has evidently been arranged with the idea of each process following one another with as little handling as possible. The entrance for workpeople might be improved as it is always advisable to have a direct entrance to each department, which is not the case in plan shown, also there should be a direct entrance to the yarn room, to facilitate the unloading of yarn.

"The position of the packing and stock-room should be reversed, as it is not wise to take all packed goods through the stock-room.

"The factory is arranged for an output of 2000 to 2500 dozen per week, but the additional section shows how the factory may be made twice the size, without losing any of the advantages of the smaller plan.

"There are places provided for the following machinery: One boiler; one twenty-horse power engine; twelve race rib top machine, shown °; eighty four fully automatic machines of the newest type O; ten linking looping machines; four sewing and finishing machines; two washing machines; one hydro extractor; four presses.

"The enlarged plan as shown, provides room and power for an electric plant for lighting the factory.

"We notice no arrangements are made for mending and laying, except in stock-room, this is scarcely the better plan, and it is a question if the various departments are equally balenced."

Bi-Colored Hosiery.

A process for dyeing two colors on hosiery has been patented by Wallace Wilson of Philadelphia.

The stocking is made with white woolen and white mercerized yarn introduced in any desired manner. The goods are then dyed in the piece according to the following formulas given by the inventor, and which, as

the inventor claims, will color the wool one shade and the cotton another.

Black with red tips (for fifty-pound goods).—Wool-dye: Glauber salts, five pounds; sulphuric acid, three and one-half pounds; acid-black No. 54, two and one-half pounds. Tip-dye: Chlorentine-red B, six ounces; table salt, two pounds. Dissolve Glauber salts first in dye bath at 90°. Add sulphuric acid diluted in one-half gallon of water. Dissolve black No. 54 in boiling water and add to dye bath. Dissolve chlorentine-red B in boiling water and add to dye bath. Throw in table salt. Bring dye bath to 140°, enter goods, and bring to boil. Boil forty to fifty minutes until goods are up to shade.

Goods must be thoroughly washed and wrung out before dyeng. Use sufficient water in dye bath to float the goods. When goods are up to shade, lift and whizz. Wash off in ample bath of warm water, with one-half pound of neutral soap and two ounces of acetic acid. Lift and whizz.

Black with blue tips.—Use one and one-half ounces acetylene-blue, 6B, in place of chlorentine-red.

Black with pink tips.—Use two ounces fast pink.

The process of handling goods given for black and red is the same for all black and color combinations; but in every instance instead of dyeing with both colors at once it is equally feasible to dye the wool-dye first, as given above, lift and whizz, then enter bath of chlorentine-red and table salt, as above, and boil fifteen minutes.

Tan with contrasting tan tips (for fifty-pound goods).—Wool-dye: Indigotin, two and seven-eighths ounces; orange Y, twelve ounces; potash-yellow, three and one-fourth ounces; Glauber's salt, twelve pounds. Tip-dye: Cupranil-brown G, four ounces; table salt, four pounds. Boil twenty minutes and then add sulphuric acid thirty ounces. The above may be dyed wool-dye first and tips afterward or all together.

Pink with blue tips (for fifty-pound goods).—Wool-dye: Glauber's salt, ten pounds; sulphuric acid, two and one-half pounds; pink B, one-fourth of an ounce. Tip-dye: Acetylene-blue, 6B, four ounces; table salt, one and one-half pounds. Enter at 140° and bring to boil. Boil one hour or until up to shade desired. This may also be dyed wool-dye first and tips afterward or all together.

Blue with pink tips (for fifty-pound goods).—Wool-dye: A violet, 6 B S, one thirty-second of an ounce; patent blue L, one-sixteenth of an ounce; acetic acid, twenty ounces. Tip-dye: Fast pink, one and one-half ounces; table salt, three pounds. Enter at 140°, bring to boil, and boil to shade. Wash and dry. As before, this may be dyed wool-dye first and tips afterward or all together.

The British consul at Philadelphia has made a report to one of the English Boards of Trade, in which he states that Cotton's patent full fashioned hosiery machines are meeting with a considerable demand in that city. Most of the machines thus far delivered have come from Germany, but as the demand is in excess of the supply, there ought to be a chance for British makers to find a market for their machines. The report states that the German machines cost f. o. b., Hamburg, $1700 for ladies' 18-section legger; $1460 for men's half hose legger; and, $1700 for a footing machine. The American duty will add from $500 to $750 to these figures, according to the class of the machine.

—A suit for damages was recently tried in England, where the widow sought to recover for the death of her husband, who was an engineer, and had been killed by the fall of a derrick while at his work. At the time of his death he was a shareholder in the company. The issue involved was whether a workman could be his own employer, and an employer his own workman. The court decided that he could, and assessed damages fo the full amount.

SILK DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Spun Silk Industry.

LUDWIG BRAUN.

After a long period of depression, the spun silk industry has experienced greatly increased activity. In England, the manufacturers employ fine white wastes from China for the production of yarn above No. 200, in which grades the superiority of the English yarn is not disputed. Probably 35 per cent. of the production of the silk spinning mills is used in the manufacture of plush.

The double threads are employed in the production of elastic fabrics. The cannettes are for weaving Scotch articles, the twists for making sewing silks, and the white fancy silks for the manufacture of lace. The ground for laces is grege, the ornament being made with waste silk yarn. The fancy silk is the product from the waste of China, or Brussa silk thoroughly degummed.

Owing to the delicate machinery of the lace loom, it is necessary to employ a smooth yarn, plain, without down or knots, fine, and at the same time brilliant. The English have long been the only spinners capable of producing such a yarn. The English machinists have a well deserved reputation for the construction of first-class self actors for spun and fancy silk.

The use of spun silk has recently been greatly extended in the manufacture of broad silks. Owing to the improvement of silk spinning machinery, it is now possible to spin No. 350 two-ply. These fine numbers are used for the manufacture of broad silks. The finest yarn used for velvet is No. 200 two-ply. The two-fold thrown spun silk is employed today not only for the floor of velvet, but also for warp of silks. With this material tie silks are manufactured, with 190 to 200 threads per inch, and with No. 250 or No. 300 two-ply yarn in the warp. This turns out a very salable fabric.

Owing to its greater bulk, the spun silk thread "covers" more than the organzine thread of the same price, and this difference is especially important in the manufacture of fabrics in which the filling is a light color and the warp a dark color. If we use organzine in such a fabric, we must use a very closely set silk warp, in order that the light colored filling may not show through the warp.

The spun silk as warp can only be woven in fairly coarse reeds. It is not advisable to use a reed finer than 70's, with two threads in a dent. All spun silk used as warp must first be gassed. The consumption of two-ply spun silk for warp is increasing in plain goods, not only for tie stuffs, but also for dress or blouse materials. A 50 reed with three or four threads per dent, answers well for such fabrics. Spun silk is employed in the warp for all sorts of stripes, when it is desired to obtain a strong contrast between stripe and ground.

For filling it is generally better to use tram, because the latter is more loosely thrown, and gives a better "cover." Spun silk is not used very extensively in the manufacture of broad goods, but the use of single spun silk for filling has in the last few years very much increased in the manufacture of piece dyed whole silk articles, such as the well known "Satin Liberty;" also for plain serges and tie stuffs with brochee effects.

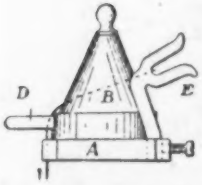
Single spun silk has the great advantage of being loosely thrown, and will consequently absorb the dye as well as tram. It is cheaper because it is spun directly on the cops, and the expense of weaving and spooling is thus saved.

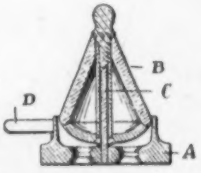
—A British Consular report states that fancy cottons decorated with pictures of flags, bicycles, etc., find a ready sale in Abyssinia and Zanzibar. Samples of the goods have been forwarded to England and placed on exhibition in Bolton.

ORIGINAL DESIGN FOR SILK GOODS. DESIGNED FOR THE TEXTILE WORLD BY T. HENDRY, PUBLIC DESIGNER.

Spindle for Silk from the Cocoon.

This spindle consists of three principal pieces: a base, a small cone, a vertical stem terminating at the upper part in a cup which forms a bearing for the rotating cone. The base (A) being fixed to the frame of the fila-



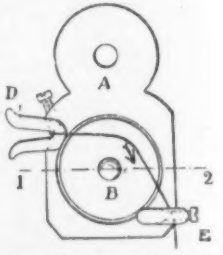


ture, serves to support the spindle. The cone (B) is made of a porous substance, in order to better absorb the moisture of the yarn, and is hollow in order to save weight. Fig. 1 gives a view of the device, Fig. 2 is a cross section Fig. 4 is a plan in which the line 1—2 shows where section Fig. 3 is drawn. The vertical stem (C), fixed at the lower end of the stand, has the upper part hollow, to furnish a socket which saves the oil for the lubrication of the spindle. There is a small guide (D), receiving the yarn, and a large guide (E) over which the yarn passes, after having passed obliquely around the cone of the spindle. The thread makes a right angle at the guide (D), and passing over the cone, causes the latter to revolve. The revolving cone carries the thread down toward its base, but at the same time the large guide (E) has a tendency to draw the thread upward. This results in rolling the thread back and forth on the cone, which removes all down from the thread, producing a very superior silk.

—Owing to the scarcity and high price of coal in Germany, the advisability of compelling owners to work idle mines, is being agitated. The German government possesses this power under present laws.

Ondule Silks.

These effects which have been so popular in silk fabrics during the past season, were produced at first by a reed in which the lower ends of the wire were alternately spread and brought together by a screw mechan-



ism in the batten of the reed. This device was described on page 1046 of the June, 1900, issue of the Textile World, and four patterns of the goods were there illustrated.

According to L'Industria Tessite e Tintoria, this method has not proved entirely satisfactory, as its use was limited to fabrics with a small number of warp threads to the inch.

Other devices have been brought out to overcome this objection to the Patrone reed. One of them invented by a Mr. Griffert, consists in the use of a reed having the wires fastened firmly and arranged in fan shapes as shown at Fig. 1.

The warp threads are drawn through this reed in the usual manner, and when on the loom the reed is fastened on a frame and by suitable mechanism, is raised and lowered during the weaving operation, thus alternately spreading and contracting the warp threads, and producing the ondule effect. The mechanism can be adjusted to produce any curve desired.

The Textile Manufacturer mentions another reed, the invention of a Mr. Erdmann. This is a solid reed, but instead of the wires being arranged in a straight line, they are placed in an undulating line, as shown at Fig. 3B, which is a cross section looking down on one of these reeds as it rests on the loom. This reed is designed to

place the filling in irregular lines in fabrics that are to be watered or moired.

The watering of tissues rests upon the principle of crossing the weft threads by folding the fabric upon itself, so that the threads in one layer cross those of the other at certain points, and then pass the folds between two rolls subjected to strong pressure, so that the tissue is flattened and the impression of the lower threads remains marked on the upper ones, and vice versa. This is the principle on which watered fabrics are mostly produced, and it is evident

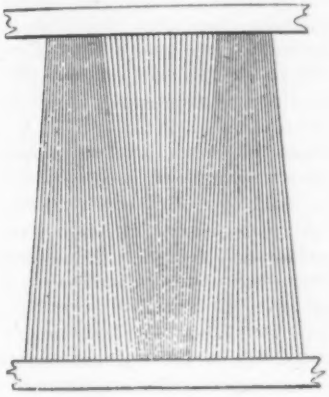


FIG. 1

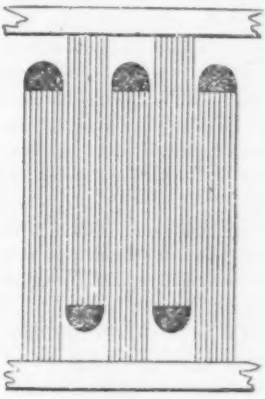


FIG. 2.

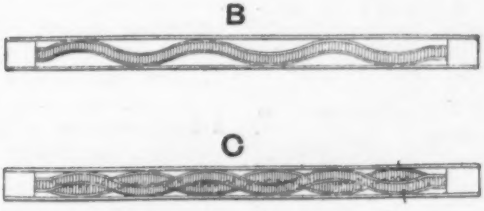


FIG. 3.

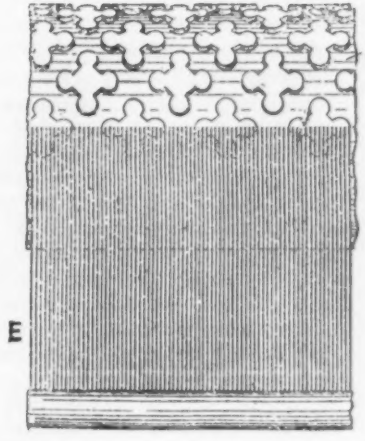


FIG. 4.

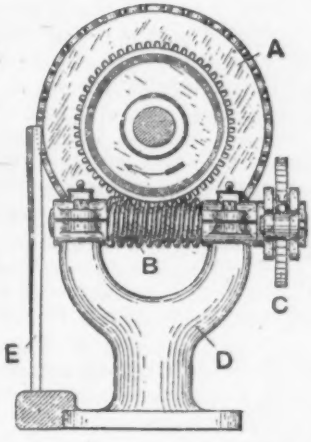


FIG. 5.

that much care is required to obtain such a crossing of the weft threads as will give a good result.

Many systems have been proposed for facilitating the process, and adopted with more or less success. The latest novelty in this line is the Erdmann reed, which, as explained, causes the weft to assume undulating lines in the fabric, which, when submitted to the watering process, will produce a corresponding design on the fabric.

The slay consists of an ordinary reed, the wires of which are soldered so as to present a regularly or irregularly undulating line.

One form of the Erdmann reed consists in arranging the wires of the reed in different curves at top and bottom, as shown at Fig. 3C, and then by giving the reed an up and down motion, such as is applied to the Griffert reed already described, the ondule effect is produced crosswise of the goods. The two systems can be combined producing the ondule effect in both warp and filling.

A peculiar reed exhibited at Paris is shown in Fig. 2. It is specially suitable for crossed warp goods and trimmings which are still made on hand-looms. A twisting of the thread can be easily effected by it. Naturally the warp threads which are to be crossed in this peculiar manner have to be conducted over or under the loom harness, and the heald mails holding the respective threads have to be connected to the healds when the crossing is to be effected from below, by means of a revolver hook connection. But if the crossing is made above, the thread is laid over, and the respective heald has only to be lifted over.

One of the most difficult problems connected with reeds is solved by the novelty shown in Fig. 4—viz., that of producing patterns in the cloth by means of the reed. E is a portion of a reed, the dents of which are bound or soldered in fast at the bottom into a frame, and are free at the top. The dents must be tolerably strong, but also elastic, to enable them to stand the beat-up on the fell of the cloth, and at the same time to yield to the pattern roller.

A represents a roller engraved with any kind of pattern. It is placed at the back of the reed at such a height that the lifted warp threads do not touch it. The side view Fig. 5 shows how the roller is turned. A worm-wheel fixed upon the roller end engages with a worm B on a cross-shaft which is turned by a ratchet wheel C and a pawl lever. The parts are carried by a pedestal D, firmly connected to the lower bar of the reed. According to the quicker or lower rotation of the roller, depressed, regular, or extended figures or effects are produced in the tissue. Such figures are possible with good effect only in silk or very fine cotton tissues woven with a linen or taffeta weave.

The last described device has not yet been used in the production of goods for the market.

A European View of the Silk Markets of 1900.

In a very clear and intelligent review of the silk situation during the year of 1900, Chabrieres, Morel et Cie, of Lyons, say that the history of the year is brief and sad. The previous year had been marked by the uninterrupted rise of prices and extension of business. 1900 has witnessed an uninterrupted drop in prices and shrinkage of business from one end of the year to the other, notwithstanding the series of fugitive hopes and promises which were not fulfilled.

The following table gives the quotations of leading grades at the beginning of January, June and December, 1900:

		Jan.	June	Dec.
Greges Cevennes extra 10/16	Fr.	60	53	48
Italie, 1st grade 10/16	"	59	48	44
Brousse, 2d grade 13/15	"	55	41	39
Syrie, 2d grade 9/11	"	55	43	39
Japon fil. 1 1/2 10/12	"	57	46	42
Canton, good No. 2 10/12	"	50	34	35
Tsatlee Gold Kilin	"	36	30	28

This shrinkage in values is explained by the shrinkage in the deliv-

ery from the eighteen principal conditioning houses of Europe, which were in 1898, 45,931,000 lbs.; in 1899, 51,966,000 lbs.; and in 1900, 42,112,000 lbs., or a loss of 19 per cent. for 1900, as compared with 1899. Another reason for this decline in prices has been the shrinkage in exports to the United States, which amounted in 1898 to 8,294,000 lbs.; in 1899, 11,000,000 lbs.; and in 1900, 7,425,000 lbs., or a loss for 1900 of 33 per cent., as compared with 1899.

Another cause for the depression in the goods market has been the reduction in the amount of goods consumed which naturally followed the rise in prices. It is an admitted fact that silk is no longer an article of luxury, but has taken its place side by side with the other textile materials in supplying the demand of the million. When the price is low, the consumption increases, but as soon as prices rise, silks lose their democratic character, and the stocks accumulate in the warehouses.

The depression in 1900 is but the corollary of the boom of 1899. Hardly a month of the last year has exhibited any change in the monotony of the story. From January to March, the market remained, nominally, at least, in an atmosphere of confidence and prosperity inherited from the preceding year. There were, however, during this first quarter, a few sales made without attracting much attention, and at a very low price, which indicated the real condition of affairs. At the beginning of April, the decline took on a more rapid pace, without being accompanied by any large increase in business transacted. In June, it was learned that the European silk production was not as great as had been expected, except in France, where it exceeded that of the preceding year by fully 30 per cent.

The price of new silk in Italy and the Levant rose above the market of other countries. On the other hand, it was learned that by reason of the high prices prevailing, the far East had exported during the season of 1899 and 1900, 198,500 bales, as compared with 177,000 bales in the previous year. The summer months were marked by unusually hot weather, and the market fell into a state of extreme dulness.

At the beginning of October, the price of the Japan silk No. 1 1/2 10/12 which then was 39 francs, tempted some importers and consumers with small stocks, to make offers. Large orders were cabled to Yokohama, where a stock of 15,000 bales had accumulated; but, the business was at once discouraged by the exaggerated ideas of the Japanese, who raised their price, and the market fell back quickly into its usual calm, and but a very small fraction of the advance over the lowest price recorded for the year was maintained.

As is usual during periods of depression, the trade indulged in many hopes which proved delusive. Among these may be mentioned the Paris Exposition, which exerted no influence upon the sale of goods. Another was the expected stoppage of exportations of silks from Canton and Shanghai; this trade was not interfered with by the war in China. Then, there was the presidential election in the United States, the happy issue of which did not rally the American market at all.

The market reached the end of its hopes and the end of the year at the same time. The situation is nevertheless, infinitely more sane today than at the period of frenzy, when prices were at their highest point in December, 1899. If the mills have not resumed their normal business, they have at any rate liquidated the large stocks of raw material, and they are now in the possession of a very small quantity from which to manufacture. The price of silks has fallen from 20 to 30 per cent., and without any doubt the latent power of low prices to increase the consumption of goods, has already begun to exert itself. Side by side with the paralysis which has taken possession of the American market, we find a general prosperity in the United States, which should in due time affect the consumption of silks as well as of other products.

POWER DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

ELECTRICITY—STEAM—WATER.

Thicker Boiler Plates.

By R. S. Hale, Consulting Engineer Mutual Boiler Insurance Co., of Boston.

It is not many years since the boiler insurance companies set their faces against anything thicker than 7/16-inch plate for plates exposed to the fire, and nearly every one remembers the time when the United States rule forbade plates thicker than ¼ inch to be exposed to the fire; I should not want to say that this rule was not still in force. One of the prominent engineers of the country last year specified 17/32 plates for some boilers to be insured by the Mutual Boiler Insurance Company, which, after some consideration, was approved.

The size of boilers now made is larger than was formerly considered the best practice. Not many years ago a 60-inch boiler was the standard; today 72-inch is the more common; and many boilers of 78-inch, 84-inch and even 90-inch are being built. Pressures have also increased. Formerly the standard pressure was 80 lbs.; today it is 125 and 150 lbs. Now, the larger the boiler and the higher the pressure that is carried, the lower will be the cost of installation and of operation, and the limit to further increase, of size or pressure, is the limit to the thickness of the shell plates, which at present are seldom made thicker than ½-inch.

For steel of 60,000 lbs. tensile strength, with a quadruple riveted joint of 90 per cent. efficiency, and a factor of safety of 5, this limits the pressure to 180 lbs. in a 60-inch boiler, to 150 lbs. in a 72-inch boiler, and to 120 lbs. in a 90-inch boiler, while, with 7/16-inch metal, which is more commonly used than ½-inch, a 72-inch boiler with triple riveted joints carries only 125 lbs. pressure. If 90-inch horizontal tubular boilers could be made to carry 150 or 180 lbs. of steam pressure, they would compare very favorably with even the best water tube boilers in price and economy, and it will therefore be of interest to determine whether thicker plates than ½-inch may not be used.

It is interesting to note the reasons for the old and present limits. If the plates are not exposed to heat or are exposed to the heat of the steam only, there is apparently no difficulty with plates one inch thick and even more, but if plates are exposed to the fire, it is thought they reach a dangerous temperature. What temperature will they reach? I am not aware that any absolute experiments have ever been made of the temperature of the surface of the water side of a plate, since such tests would be very difficult, but the work on cylinder condensation in engines, and in fact almost all work on conductivity, indicates clearly that the water side of a plate never exceeds the temperature of the water in contact with it by more than a very few degrees, if it exceeds it at all. With oil or scale on the water side, this would not be the case, but oil or scale would affect

thick and thin plates by the same amount.

On the other hand, the side of the plate exposed to the hot gases is, it is known, much cooler than these gases. This difference has also never been measured directly, but the temperature of the plates may be computed as follows: For a constant temperature of the inside of the plate the outside of the plate will reach its maximum temperature when the plate is transmitting the maximum amount of heat.

Boiler tests and conductivity tests indicate that the maximum heat transmitted per square foot per hour is the evaporation of from 20 to 50 lbs. of water from and at 212°, or, taking the higher figure, 43,800 B. T. U. per hour. The conductivity of iron is given variously at from .11 to .18 in the C. G. S. units. If we take the conductivity as .1 and the flow of heat 48,300 B. T. U. per square foot per hour, we find that the difference of temperature between the inside and outside of a 1-inch plate is only 168° F. This probably represents the worst ordinary conditions, though for what is known as blow-pipe action, the difference may be more. For a ½-inch plate the girth seam is one inch thick, and 168° would be the greatest difference of temperature between the inside and outside.

If the steam pressure is 150 lbs. the temperature of the water side will be 365°, and of the outside of the plate, 537°. If the plates are 11/16 the outside will be 63° hotter, or 600°, the inside being the same. Now, in steam superheaters, which are used extensively abroad, the temperatures of the steam reach 700°, and yet the thin steel tubes of the superheater do not suffer, although they must be themselves at a higher temperature than the steam, and above 700°. Hence it follows that even an 11/16-inch plate will not reach as high a temperature as is used without trouble in superheaters.

The old ¼-inch rule gives an interesting result. The water side of a ⅜-inch plate in a boiler worked at 100 lbs. would be 338° and the fire side 391° in the body of the plate where it is ⅜-inch thick, and 464° at the girth seam where the thickness is ¾-inch. The temperature 391° corresponds to only about 210 lbs. pressure, at which pressure many boilers are worked today. Now, the ⅜-inch plates in the old days gave as much trouble from blisters in the body of the plate, where the metal was only ⅜-inch thick, and the temperature of the fire side not over 391°, as they did at the girth seams where the temperature ought to have been greater.

These facts show that the plates of superheaters and high pressure boilers are today worked at much higher temperatures than occurred in the old iron plates which gave trouble, and it follows that the reason for thin plates lay in something more than the mere question of temperature. It was probably due to some difference in constitution between the old iron plates used when the ¼-inch rule came into effect and the steel used today in superheaters and high pressure boilers. The laminations of the iron plates are a sufficient reason to account for this at once. If a lamination existed there would be an additional resistance to heat transfer at the lamination, and the outside of the sheet would naturally reach a very high temperature and cause trouble by blistering, while this would not occur with homogeneous steel.

Now this theory, that it was the laminations in the iron plates and not the actual temperature reached, that was the foundation for the old limit to thickness, is only a theory, but when it is combined with present-day practice of using ⅜-inch, 7/16-inch, and ½-inch plates of homogeneous steel, it indicates that we probably have not yet reached the limit of thickness.

The Mutual Boiler Insurance Company has today under its insurance many boilers with ½-inch plates, some

of which have been in service over ten years. Of these, only one has given trouble, which is as good a record as would be expected with 7/16-inch plates. It therefore is probable that ½-inch is not the limit, and we are prepared to approve specifications calling for 9/16-inch plate of the best steel, which, with quadruple-riveted joints, will allow 170 lbs. pressure for a 72-inch boiler, with a factor of safety of 5, or a pressure of 135 lbs. in a 90-inch boiler with the same factor of safety.

A 90-inch boiler can easily and economically be worked to 300 H. P. and would cost, set and in place, about $2000, or $6.66 per H. P. Such boilers have been worked at good economy to 400 H. P., and with some loss of economy to 700 H. P. At a rating of 400 H. P., the cost is only $5.00 per H. P.

Of course this does not mean that we will guarantee that these thicker plates will never give trouble, any more than we guarantee that ½-inch or 7/16-inch plate will never give trouble. It is our opinion, however, that there is but slight risk of trouble, and no more risk of explosion, than with the thinner plates, and we recommend such of our members as want a cheap, good, high-pressure boiler, at least to consider the use of such plates.

Mixture for Preserving the Floors of Factories.

The La Revue Technique gives the following as an excellent preparation for treating the floors of factories, particularly those of the engine and dynamo rooms. Five parts bees' wax and one of potash are boiled in sufficient water to thoroughly dissolve the potash. The mixture should be boiled until the water combines completely with the wax. The mixture is then taken from the fire and a quantity of boiling water is added, stirring constantly at the same time. It will be found if the process has been conducted properly, that 225 parts of water can be added to the original quantity, and the substance will still retain its homogeneous character, no clear water appearing. The mixture is then heated for five or six minutes, but is not allowed to boil. It is then taken from the fire and stirred vigorously until cool. This forms a sort of cream, which gives a brilliant polish to wood in a very little time. It should be applied with a piece of linen, and the wood then rubbed with another piece of the same material.

Hard Wood Lagging for Pulleys.

It is frequently found necessary in power plants to change the size of the driving pulleys in order to increase their power transmitting capacity. Frequently, also, a larger engine is installed, and in such cases, especially if a second-hand engine has been purchased, a change in the size of the driving pulley is necessary, and the manufacturer generally proceeds to the nearest machine shop and contracts for an iron wheel, either for belt or rope transmission.

There is another method of effecting these changes, consisting of lagging the pulley, and our illustrations show this work as done by the Dodge Manufacturing Co., Mishawaka, Ind. It is claimed that it is a much quicker, simpler and cheaper method.

Taking an engine supplied with a balance wheel. In view No. 1 is shown a hardwood lagging after its application to a balance wheel in the paper mill of the Dells Paper & Pulp Co., Eau Claire, Wis. It was in order to provide against any possible failure of their water supply that this concern decided to install a steam plant. They secured a second-hand stationary engine which was supplied with an 18 foot, 15 inch square rim balance wheel weighing 50,000 lbs. As the balance wheel was not suitable for driving purposes, it was either necessary, in order to use the engine to secure a new driving pulley or lag this old one up.

In figuring the cost of a new driving pulley and of lagging this balance

wheel, it was seen that a saving of about 50 per cent. in the cost of exchanging this balance wheel towards the purchase price of a new wheel

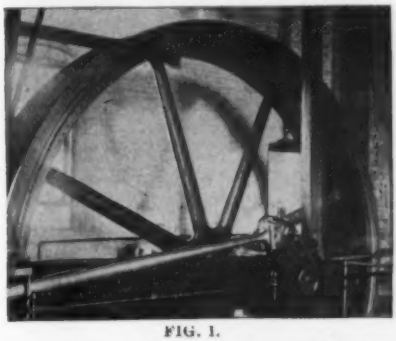


FIG. 1.

would be made by using the hardwood lagging, and contract was accordingly given the Dodge Manufacturing Co. for the same. This lagging

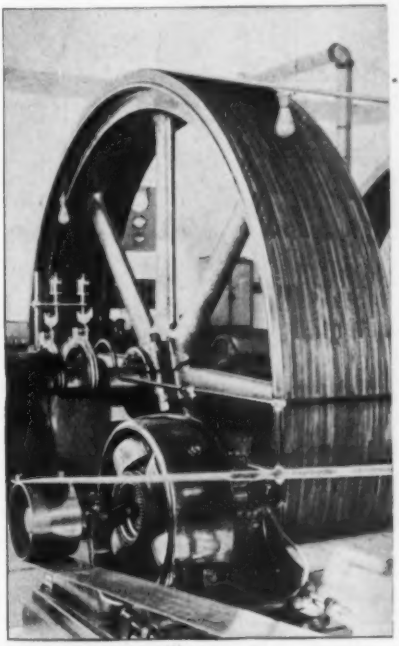


FIG. 2.

is 44 inches face, being grooved for eighteen 1½ inch ropes and is capable of transmitting 750 horse-power. The internal diameter is 18 feet, while its pitch diameter of ropes is 19 feet. The balance of the rope transmission equipment, consisting of driven sheave, automatic take-ups, etc., were also purchased of the Dodge Company.

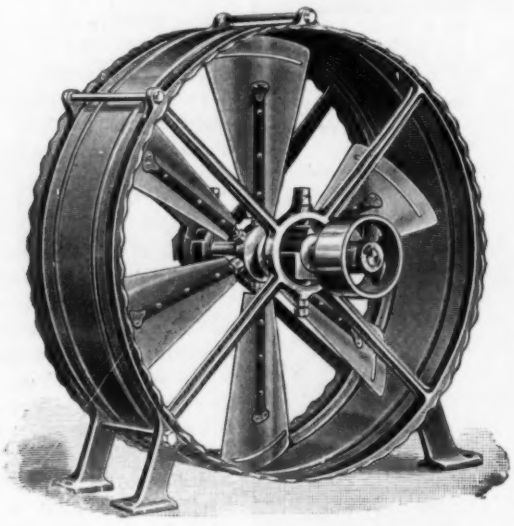
In the case of an engine supplied with a band wheel, view No. 2 shows a good example as the lagging was applied in plant of the Citizens Traction Co. of Oshkosh, Wis. Here it was desired to transmit greater power than the old iron band wheel would allow. The increase in power was easily accomplished by the application of the lagging, which widened the face of the driving wheel and with the attending increase in diameter secured, together with the superior tractive qualities of the wood surface over the iron, a material increase in the amount of power transmitted from the original driver, was easily made possible. The internal diameter of this lagging was 16 feet, outside 17 feet, with 37 inch face.

These few illustrations show that old balance wheels are of value for transmission purposes, also that a main line shaft belt transmission may be easily converted into a rope drive, and the maximum of power secured, resulting from the saving of frictional losses in the bearings. On the other hand, a rope drive may be turned into a belt transmission, and as the lagging can be made of any width, a wider belt can be used on a fly-wheel having the lagging, or two or more belts side by side can be run on the same rim.

As the lagging increases the effective diameter of the fly-wheel, the linear velocity is increased by the greater diameter, the speed of rotation remaining the same. The familiar fact of greater coefficient of friction or driving power of the wood surface over the iron, is also a feature worthy of the most serious consideration.

The construction of the laggings is the result of many years' experience and through the use of expensive and special machinery and numerous patented appliances, as well as patents upon the construction as an entirety.

After the building up process, which requires a large force of very active and expert men and almost innumerable appliances, powerful presses, etc., the inside of the rim is turned to accurately fit the face of wheel upon which it is to go; it is then attached to the pulley, and the face turned for either belt transmission, or grooved for a rope drive, as the case may be. This work, and alterations in main drives are made with but little loss of time and at small expense, when compared with the cost of new flywheels.



The Wing Disc Fan.

The illustration accompanying this article represents one of the many types of disc fans made by the L. J. Wing Manufacturing Company, 96-97 Liberty Street, New York. Their long experience in the manufacture of fans has resulted in bringing their product of the present time to a very high standard. The blades are curved and have an expanding pitch, thus increasing the amount of air moved, and reducing the slip. The blades are adjustable, and can be set to suit all conditions under which the fan is operated. This makes the fan available under widely varying conditions. The current of air can be reduced, increased, or turned without changing the size of fan, pipe or belt.

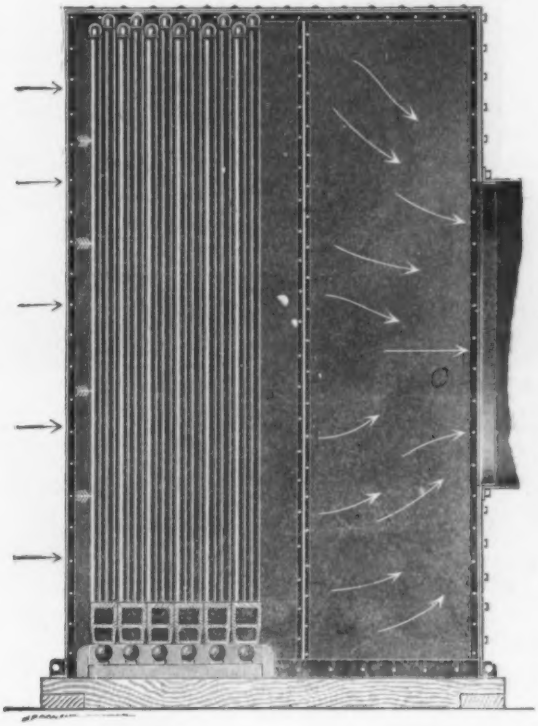
It is claimed that owing to the correct mechanical principles upon which the fan is constructed, a very large quantity of air is moved in proportion to the power consumed. The fan is very light in weight, and can be easily applied to different positions, such as at either end or the centre of the pipe, in a wall, window or door, horizontal or perpendicular, as circumstances may require. It makes very little noise, and does not obstruct the light. In addition to the belt-driven fan, such as shown in the illustration, this firm makes them to be driven by direct engine connection or electric motors.

The firm has issued a catalogue illustrating and describing the various types of fans, and also showing illustrations of buildings, dry rooms, etc., in which the Wing Fan is installed.

—A chimney has been erected in Saxony which is said to be the highest in the world. The height is 459 feet.

A Type of Sturtevant Heating and Ventilating Apparatus.

The accompanying illustration serves to show the most modern type of heating and ventilating apparatus built by the B. F. Sturtevant Co., of Boston, Mass. The heater, consisting of a series of steel pipes screwed into independent sectional bases, is encased in a fireproof steel plate jacket in connection with the inlet of the fan. The independent bases are clamped together, and supplied as a single group from the source of steam supply, the arrangement usually being such that either live or exhaust steam may be used.

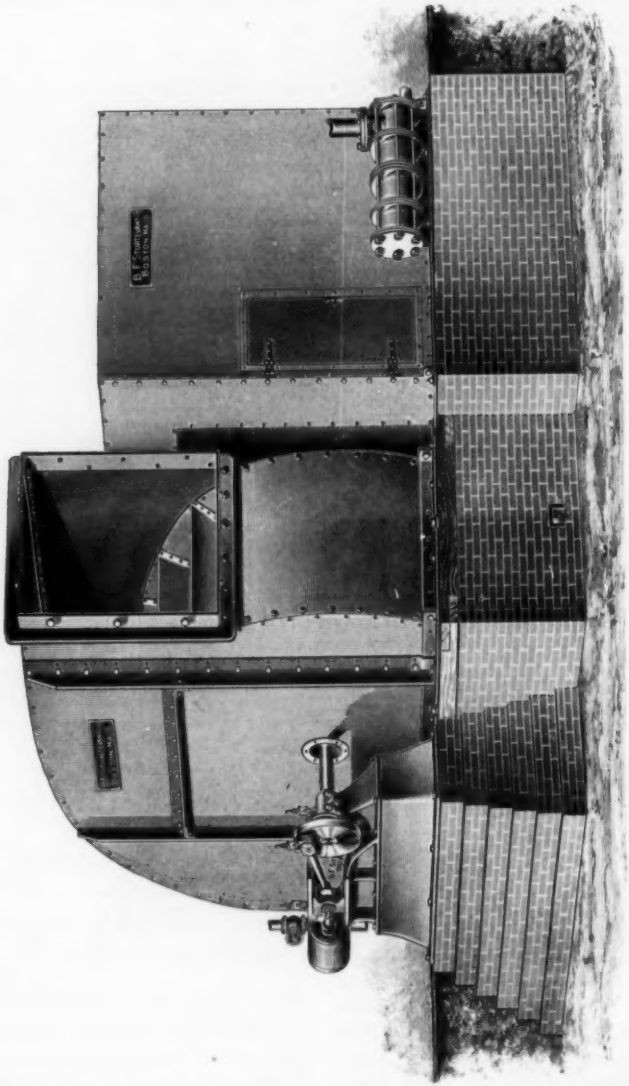


The arrangement of the steam pipes in the heater and their relative spacing is such as to cause a breaking up of air currents and to compel intimate contact between the air and the heating surface with the result that an immense amount of heat is transmitted for a given area. In fact, the rapid carrying away of heat in the moving air results in internal condensation fully five times as great as would occur in steam pipes exposed in the ordinary way for direct heating.

According to the pressure of the steam and the number of rows of heating surface across which the air is drawn, it may be heated to different degrees of temperature running up to even 200 degrees with high pressure steam and fairly warm entering air. It is possible however with the utmost ease to regulate the temperature to the exact requirements, and at the same time to control the volume of air which is thus heated as a rule to temperatures of from 120 degrees to 140 degrees.

The fan itself is of the well known Sturtevant steel plate construction but of the ¾ housing type designed

in this instance for the heating of large buildings and driven by a direct connected horizontal engine. The engine foundation is bonded into the brick foundation of the fan which is



so designed as to form the lower portion of the housing or scroll of the fan, which in turn may be arranged to discharge air horizontally at the bottom or horizontally at the top, according to its position in relation to the duct through which heated air is conveyed.

Regulation of the engine speed is of course the ready means by which the volume of air supplied to the building may also be regulated, but it is evident that at all times the fan operates with entire independence of the conditions of the weather and that the velocity and temperature of the entering air may be instantly changed.

DYEING DEPARTMENT

Dye Recipes for January.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

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Recipe No. 17.

Dark Green on Cotton Yarn.

Direct Green B L on 1000 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Direct Green B L.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at 180° F., and while turning bring to the boiling point and dye at this temperature for one hour. Wash and dry.

Direct Green B L produces extremely rich shades of green, either in large or small quantities. For dark shades the yarn may be entered at a higher temperature, but for light shades the most even results are obtained by introducing between 160° and 180°.

The shade produced is very fast to light and washing, and is especially adapted for use in upholstery work and ginghams, and fabrics containing white and green woven together. It combines well with most of the direct cotton colors.

Recipe No. 18.

Brown on Cotton Yarn.

Direct Brown No. 186 gives rich and ton yarn.

Prepare the dye bath with

3 lbs. Direct Brown No. 186.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. of Common Salt.

Enter the yarn at 160° F., and while turning raise to a boil and continue the boiling one hour.

Direct Brown No. 186 on 100 lbs. cotyellowish shades of brown, and will produce even shades, even when entered at a boil, as the dyestuff goes on the fibre very slowly.

The bath is not exhausted, and future lots require about one-fourth less dyestuff.

The shade produced is quite fast to washing and very fast to light, standing exposure very well. It is applicable to any class of cotton work, either as a self color or in combination.

Recipe No. 19.

Light Blue on Cotton Yarn.

Diphenyl Blue 5 G on 100 lbs. cotton yarn.

Prepare the dye bath with

½ lb. Diphenyl Blue 5 G.

(John J. Keller & Co., 104-106 Murray St., New York.)

20 lbs. Common Salt.

Enter at 170° F., bring to a boil, and dye at this temperature one hour.

Diphenyl Blue 5 G is fast to acid, stands hot pressing without change of shade and is reasonably fast to washing.

Recipe No. 20.

Brown on Worsted Carpet Yarn.

Pegu Brown D R on 100 lbs. of worsted carpet yarn.

Prepare the dye bath with

4 lbs. Pegu Brown D R.

(C. Bischoff & Co., 87-89 Park Place, New York.)

10 lbs. Glauber's Salt.

Enter yarn at 170° F., bring slowly to a boil. Dye at this temperature for one hour, exhausting the bath by gradually adding

5 lbs. Acetic Acid.

Pegu Brown D R is as fast to light and washing as Alizarine Brown, and may be dyed similar to alizarine colors, on a chrome bottom.

Recipe No. 21.

Pink on Cotton Yarn.

Irisamine G on 100 lbs. cotton yarn.

Prepare the dye bath with

1½ lbs. Irisamine G.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

10 lbs. Common Salt.

Enter yarn in cold bath, raise to 125° F., and keep at this temperature for one hour.

This color is of special importance for the dyeing and printing of cotton, possessing as it does the advantage of a very pure and blue shade.

It will also be most useful in the printing of satins, as exceptional brightness and purity of shade may be obtained.

Recipe No. 22.

Blue on Worsted Yarn.

Alizarine Blue T S on 100 lbs. of worsted yarn.

Mordant the yarn in a bath containing

3 lbs. Potassium Di Chromate.

2 lbs. Tartar.

Enter at 140° F., bring to a boil and mordant at this temperature for 1½ hours.

Then dye in a bath made up with

20 lbs. Alizarine Blue T S.

(Anchor Color Manufacturing Co., 462 Cherry St., New York.)

1½ lbs. Acetic Acid.

Enter yarn cold, bring slowly to a boil and dye at this temperature for 1½ hours.

Alizarine Blue T S gives a fast and bloomy shade of blue at a moderate cost.

Recipe No. 23.

Orange on Cotton Yarn.

Buffalo Orange G on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Buffalo Orange G.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

20 lbs. Common Salt.

Enter the yarn at 170° F., bring to a boil and dye at this temperature one hour.

Buffalo Orange G possesses all the characteristic qualities of the direct cotton colors.

Recipe No. 24.

Lilac on Cotton Yarn.

Direct Lilac D on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 oz. Direct Lilac D.

(Bosson & Lane, 36 Central Wharf, Boston.)

Enter goods at 150° F., work 20 minutes, lift and add

10 lbs. of Glauber's Salt.

Re-enter goods and work 20 minutes longer at a temperature of 190° F.

Direct Lilac D produces a desirable shade of lilac at a very low cost.

Recipe No. 25.

Brown on Worsted Yarn.

Alizarine Brown W O on 100 lbs. worsted yarn.

Mordant the yarn in a bath containing

3 lbs. Potassium Di Chromate.

2 lbs. Tartar.

Enter at 140° F., bring to a boil, and mordant at this temperature for one and one-half hours.

Then dye in a bath made up with

10 lbs. Alizarine Brown W O.

(Anchor Color Manufacturing Co., 462 Cherry St., New York.)

1½ lbs. of Acetic Acid.

Enter yarn cold, bring slowly to a boil, and dye at this temperature for 1½ hours.

Alizarine Brown W O gives a fast and bright shade of brown.

Recipe No. 26.

Dark Green on Worsted.

Cyprus Green B on 100 lbs. of worsted yarn.

Prepare the dye bath with

4 lbs. Cyprus Green B.

(Berlin Aniline Works, 72 Front St., New York.)

dissolved in 100 times its own weight of boiling water; to which is added

10 lbs. Glauber's Salt (previously dissolved).

5 lbs. Acetic Acid.

The whole is then boiled up and cooled to about 140° F., by the addition of cold water.

Enter the goods at this temperature, raise to a boil during one-half hour, and dye at this temperature for one-half hour.

The yarn is after treated in a bath made up with

3 lbs. of Acetic Acid

and

⅓ to ½ as much Copper Sulphate as dyestuff used.

Enter at 140° F., bring to a boil during one-half hour, and then continue the boiling one-half hour. Wash and dry.

The direct dyeing with Cyprus Green B is of but little interest, but when after treated a shade is produced with excellent fastness to light, alkalies, potting and washing.

The Berlin aniline works have published a special sample and direction card in regard to Cyprus Blue and Green, which they will gladly forward on application.

Recipe No. 27.

Brown on Cotton Yarn.

Cachou de Laval N on 100 lbs. of cotton yarn.

Prepare the dye bath with

10 lbs. Cachou de Laval N.

(The St. Denis Dyestuff & Chemical Co., Sykes & Street, 85 Water St., New York, sole U. S. agts.)

2 lbs. Soda Ash

and

1 lb. of Common Salt to each gallon of water.

The dyestuff should be dissolved and added to the dye bath in two portions.

Enter at 140° F., bring to a boil, and dye at this temperature ¾ to 1 hour. Then wash and fix in a separate bath made up with

5 lbs. Copper Sulphate.

5 lbs. Common Salt.

Enter at 140° F., and bring gradually to 170° F., during one hour.

Cachou de Laval N has all of the desirable qualities of the older brands of the same dyestuff, and possesses greater solubility and blueness of shade.

Recipe No. 28.

Green on Cotton Yarn.

Erie Green B on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Erie Green B.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

20 lbs. Common Salt.

Enter yarn at 170° F., bring to a boil, and dye at this temperature one hour.

Erie Green B possesses all the characteristic properties of the direct cotton colors.

Recipe No. 29.

Blue on Worsted Yarn.

New Victoria Blue G G on 100 lbs. of worsted yarn.

Prepare the dye bath with

1 lb. New Victoria Blue

(A. Klipstein & Co., 122 Pearl St., New York.)

10 lbs. Glauber's Salt.

Keep the dye bath neutral and add dyestuff slowly to insure evenness.

Enter yarn at 160, bring bath to a boil, boil one-half hour, and work in the cooling dye bath 15 minutes longer.

New Victoria Blue G G is remarkable for its great tinctorial power, pure and greenish shade, great solubility and the level shades that it produces.

Recipe No. 30.

Orange on Cotton Yarn.

Tetrazo Orange T R on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Tetrazo Orange T R.

(New York & Boston Dyewood Co., 55 Beekman St., New York.)

25 lbs. Common Salt.

½ lb. Sodium Carbonate.

Enter yarn at 170° F., bring to a boil and dye at this temperature for one hour.

Tetrazo Orange T R produces very level shades of orange, and possesses all the valuable properties of the direct cotton colors.

Recipe No. 31.

Plum Color on Cotton Yarn.

Brilliant Azurine 5 R on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Brilliant Azurine 5 R.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

¼ lb. Soda.

Enter yarn at 180°, bring to a boil and dye at this temperature for one hour.

Brilliant Azurine 5 R possesses a clearness of shade unattainable by most of the reddish blue direct cotton colors.

Recipe No. 32.

Yellow on Cotton Yarn.

Tetrazo Yellow C H on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Tetrazo Yellow C H.

(New York & Boston Dyewood Co., 55 Beekman St., New York.)

25 lbs. Common Salt.

½ lb. Sodium Carbonate.

Enter yarn at 170° F., bring to a boil, and dye at this temperature for one hour.

Tetrazo Yellow C H produces very level shades of yellow and possesses all the valuable properties of the direct cotton colors.

The Status of Artificial Indigo.

The opening of the Hofman House, the new home of the German Chemical Society in Berlin, was the occasion for a gathering of eminent chemists from all over Europe. The discussion of synthetic indigo marked an important part of the celebration, for the commercial importance of the new processes is recognized as one of paramount interest in the chemical industry, and the two lectures delivered by the highest authorities on the subject have been regarded as a synopsis of the synthetic indigo situation up to date, and been widely commented upon.

Prof. Adolf von Baeyer delivered a lecture on the chemistry of indigo, and Dr. Brunck, the principal managing director of the Badische Anilin und Soda Fabrik, delivered a lecture upon the manufacture of this dyestuff in Germany, and its present status, and as this may be considered an authoritative statement, an abstract of his remarks will be read with interest. A correspondent of the London Times sends the following report:

Dr. Brunck first referred to the advantages offered by synthetic indigo as compared with vegetable indigo. Its purity, constant uniformity of composition, and ready reducibility in the dyeing process benefit the dyer considerably, for on the one hand he always knows exactly what he is buying, and on the other they make it possible for indigo to be used with success by less highly skilled workmen than was formerly the case. Vegetable indigo as sold varies in composition, and it required a peculiar skill in the dyer to attain with certainty a desired shade whilst using a dye of varying composition.

The prejudices against the introduction of the synthetic product were next dealt with. While some critics have stated that the impurities in vegetable indigo are essential to the dyeing process, others at the same time have gone so far as to say that the indigo of the Badische firm is not

really synthetic, but merely refined vegetable indigo. Much difficulty has arisen from the fact that people in general cannot grasp the idea of chemical individuality, and fail to realize that identically the same body can be obtained from two different sources, as in the case of indigo, from a plant and from the artificial synthesis of other substances. As a consequence, synthetic indigo has been regarded by some as a substitute or surrogate for natural indigo and classed with aniline dyes giving similar shades. All these prejudices are giving way before a better knowledge of the facts.

The development of the manufacture has been enormous. Already about $4,400,000 has been invested in the indigo department and laboratories of the Badische Company, and it is calculated that the quantity of indigo produced annually in Ludwigshafen would require the cultivation of more than 100,000 hectares—that is, a quarter of a million acres—of land in India. In July, 1897, the company built factories sufficient to supply the demand of Germany for indigo, and these were so planned as to fit in with a larger scheme if they proved successful. Success was perhaps not altogether certain, for not only was it impossible to say whether the vegetable indigo could not be reduced considerably in price, but there was always the danger that other chemical processes for the manufacture of the product might arise. But the factories have been and are being constantly increased in size, until the yield has assumed the proportions mentioned above, and the lecturer expressed most sanguine expectations that the manufacture in Germany would emerge triumphant from the competition with the Indian indigo planters.

Discussing the consequences for the indigo-planting districts in this case, he suggested that the land now devoted to the production of indigo, might with advantage produce foodstuffs, which would be available in fighting future famines, and, while disclaiming any endeavor to pose as an impartial adviser, he stated it as his firm conviction that the Government of India would be acting in the best interests of India if it immediately grappled with the question as to what could best be done with the land hitherto devoted to the cultivation of indigo, and arranged for its systematic conversion to other uses.

The greater part of the lecture was devoted to a discussion of the steps by which this success had been rendered possible. Under this head Dr. Brunck first referred to the processes for the manufacture of indigo based upon the researches of Adolph von Baeyer and starting from toluene. Such methods are of comparatively small importance, because the quantity of toluene available for use as raw material is limited; it is calculated that the total quantity of toluene at present produced would only suffice for the manufacture of about one-fourth of the quantity of indigo used annually, and the whole of it is actually required for other purposes.

The circumstances are different with reference to the manufacture of indigo as practiced by the Badische Anilin und Soda Fabrik. The process employed (Heumann's) uses, as its initial material, naphthaline, a product which is available in practically unlimited quantities. This body is oxidized by treatment with highly concentrated sulphuric acid in order to obtain phthalic acid. The next process is the conversion of the phthalic anhydride into anthranilic acid. This is combined with chlor-acetic acid and the condensation product treated with caustic alkali, upon oxidation with the air, yields indigo.

The lecturer dwelt upon the invention and development of these various phases of the process. The experimental work was carried on for several years at the initiative and under the personal direction of Dr. Brunck. Though at the inception of the experimental work, the Badische Anilin und Soda Fabrik were in possession of the best process known at the time for

the production of phthalic anhydride, yet even this process did not yield that substance cheaply enough for use in the manufacture of indigo; the new process, referred to above, for obtaining phthalic acid by oxidation with concentrated sulphuric acid in the presence of mercury salts was, therefore, devised by one of the chemists of the firm.

This process, in which the sulphuric acid is reduced to sulphur dioxide, is dependent for its commercial success upon the possibility of cheaply regenerating the sulphur dioxide to obtain once more highly concentrated sulphuric acid. For this purpose the catalytic process of the Badische Company is employed. The importance of the manufacturing operations here referred to will be most forcibly demonstrated by the fact that in the manufacture of phthalic anhydride for the production of indigo in this way between 35,000 and 40,000 tons of sulphur dioxide are produced annually, and reconverted into sulphuric anhydride and sulphuric acid.

The Badische Company, with their entire output, now take rank as the largest manufacturers of sulphuric acid in the world. For the conversion of phthalic anhydride into anthranilic acid, large quantities of chlorine are required, and chlorine is again needed for the production of the chlor-acetic acid, while for the melting operation to produce an indigo body, a caustic alkali is requisite. The problem, therefore, is how to obtain this chlorine and caustic alkali most advantageously. For this purpose an electrolytic process has been adopted, but here there was the further difficulty that the chlorine obtained was not sufficiently pure. Hence another invention by a chemist of the firm was brought into play and the chlorine is purified by liquefaction, its manipulation being largely carried on in the liquid condition. After these preliminary stages comes the actual manufacture of indigo by means of the Heumann process.

Sickness in the Dye House.

Dr. Schuler, factory inspector in Switzerland, describes in his last annual report certain appearances of illness in dyeworks, and his remarks will necessarily interest our readers. He begins with chrome mordants, and reports on a factory where some of the wool dyers who used them suffered from eczema and fissuring of the skin of the hands and arms. This was at first taken for itch, but when its true cause was ascertained, those found to be subject to it were put to different work. Two deaths have been caused in Zurich by mineral acids. The mixture of all three used by silk dyers is specially dangerous, as if it should be spilt it gives off suffocating nitrous fumes.

Throwing down water, a thing often done in such cases by thoughtless or ignorant persons, only makes matters worse. Attempts to make unbreakable flasks for the acids, or to protect ordinary flasks in some way have not succeeded; the only thing to be done is to use stronger and smaller ones, and to impress upon the men the necessity for care. Even in chemical works, where processes are carried out almost in the open air, precautions have to be taken to prevent acid vapors from reaching the lungs of the workmen, and the fumes of sulphurous acid supply a very powerful argument in favor of replacing it as a bleaching agent by peroxide of hydrogen and water glass.

Certain finishing processes often cause a spray of hydrochloric acid, which, in the best constructed apparatuses, is drawn away by a fan. In dyeing with aniline black the vapors of kinone are very apt to cause severe inflammation of the eyes, and a special case is mentioned in Dr. Schuler's report. A man who had long been employed in dyeing aniline black in a badly-ventilated place developed yellowish white tumors in the eye, between which mucus and tears collected. The cornea was badly affected, and the lens was darkened

with minute particles of dye which had penetrated the softened epithelium, and it was found on inquiring that numerous other aniline black dyers suffered in a similar way, although in this particular case the symptoms were specially severe.

either downward or horizontally. He also claims that running the current in this way prevents any air from remaining in the goods to cause uneven dyeing or damage in the bleaching process.

Figure 26 represents an elevation of

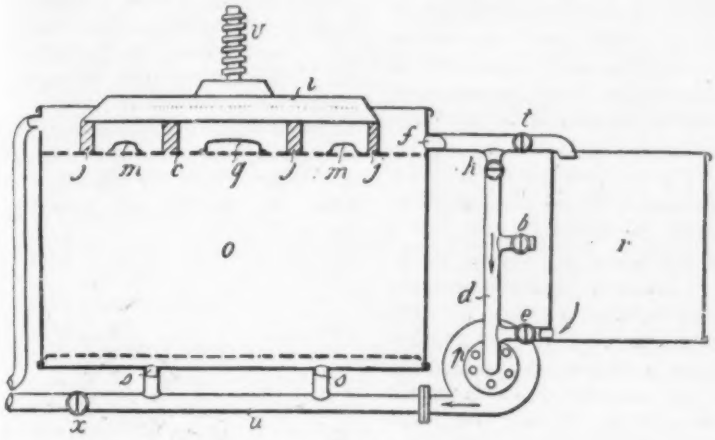


FIG. 26.

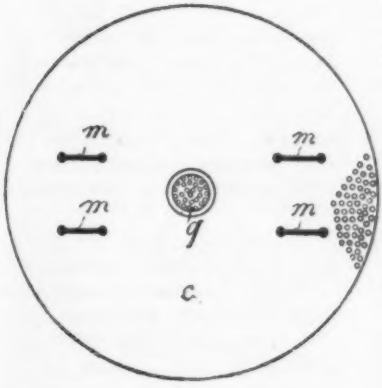


FIG. 27.

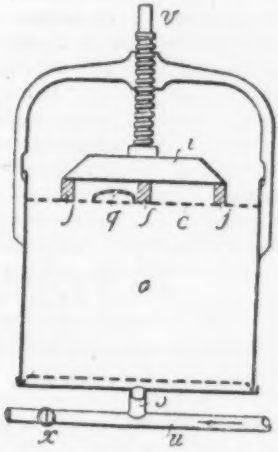


FIG. 28.

DYEING MACHINE

Machine for Dyeing or Bleaching Raw Stock, Yarn, Cloth and Knit Goods.

In this machine, the dyeing liquids pass through the material from the bottom upwards, and the invenvantage over having the current pass tor claims that this is quite an ad-

the machine; Fig 27 is a plan of the cover; and Fig. 28 is a transverse section. A perforated false bottom is placed in the tub, and the material to be treated is packed on this false bottom. The cover is then placed on the tub and the material compressed by means of the plate (l) and the screw

shown in the illustration. m, n, are handles by which to insert and remove the cover. This cover is perforated in the same manner as the false bottom.

The lugs (j) of the plate (l) have their lower faces hollowed out, so as not to prevent a free circulation of the liquor where they rest on the cover. The total area of the holes in the false bottom should be somewhat in excess of the area of the discharge pipe of the pump, so that the only resistance to the pressure of the pump will be caused by the material to be treated in the machine.

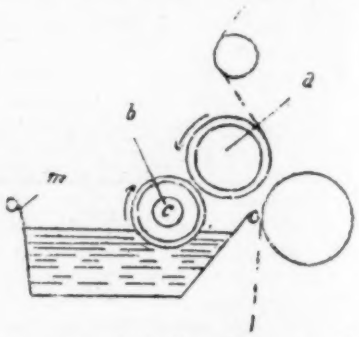
The dye liquor is prepared in the tank (r), which is connected with the pump by the pipe and valve (e). The material is placed in the machine and the pump is started. By opening the valve (e), the dye liquor is forced by the pump through the pipe and into the space under the false bottom in the tub. It passes through the perforations in the false bottom, and is forced by the pressure through the material to be dyed or bleached. The liquid rises in the tub until it passes through the overflow (f) into the pump or into the dye tank, as desired. In this way, a constant circulation may be kept up until the dyeing or bleaching operation is completed. The liquid passes upward through the material, carrying along with it all the air that may be in the goods, and which passes off as it reaches the open air above the cover.

The top of the cover and small cap (q) is six or eight inches in diameter, and a small sample of the goods is enclosed previous to the operation. In this way the goods can be sampled, and the dyer can tell how his color is coming along, without the necessity of opening the machine. If it is desired to use hot or boiling liquors, the steam pipes are placed in the space between the false bottom and the bottom of the tub.—L'Industrie Textile

Preserving Blankets on Cloth Printing Machines.

A process for preserving printers' blankets has been patented by parties residing in Choiny, Russia. The blanket, after coming from the machine, is passed through an apparatus which saturates it with a solution to prevent the oxidization and fixation of the color during the drying process. The color can then be easily removed by washing.

The illustration represents the device which consists of a box or tank in which to hold the solution. The roller, C, dips in the liquor and



presses against the roller A. The blanket is carried over the roller, A, the surface of which has been covered with the solution by contact with roller C. This saturates the blanket and prevents the dye from being fixed on the fibre in the drying process.

The roller A is driven by power and C is revolved by contact with it.

The composition of the liquor is made to suit the particular dye used. For aniline black and the tannins, a solution of soda, potash, acetate of soda, ammonia, or similar alkalies can be used.—Ost. Woll. und Lein.. Ind.

—There are now in operation in the Republic of Mexico 134 cotton mills. The importation of cotton for use in these mills during the present fiscal year promises to be largely in excess of the consumption of the previous year.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc, we will charge the enquirer with the cost of the investigation.

Count of Cotton Card Clothing.

Editor Textile World:

Please inform me what relation exists between the count of cotton card clothing and the number of points, or teeth, per square inch, or per square foot. What relation does the number 720 bear to the count and the points per square foot? What I want to know is, how to pick up a piece of card clothing and be able to tell the number of counts and crowns, and where the 720 comes from. What is it? What does it stand for? Is it another Phoenix or Minerva, or magnet around which everything circles. Who knows how it originated, where it originated, and who evolved it? I have sought diligently for some explanation of this mysterious number, as connected with card clothing. It has all the characteristics of an ignis fatuus, leading on, leading on, yet ever elusive. You will confer a great favor and relieve a great strain upon me by a reply to this question.

Distracted (56).

Before it became customary for card teeth to be set in fillets, they were always set in sheets 4 inches wide and 10 points in each inch of length. The setting used was known as plain. Under this old system, the number of crowns in each 4 inches of width constituted the count, or set of the clothing; thus, a sheet 4 inches wide, with 100 crowns in that width, was 100 counts. Such a sheet would contain 250 crowns, or 500 points per square inch, as you will see by following calculation:

One hundred crowns in the width of 4 inches, multiplied by the 10 points per inch of length, gives 1000 crowns for each running inch 4 inches wide. Dividing this by 4, we get 250 as the number of crowns per square inch. As there are 2 points to each crown, this makes 500 points per square inch.

As we have said before, the 10 points per running inch was not varied, and the number of crowns per width determined the count of the clothing; and, 100 count clothing contained 500 points per square inch. This, as you will see, is at the rate of 5 points for each number of the count, and as there are 144 square inches in a square foot, the number of points per square foot for each number of the count was 5 times 144, or 720. This is the origin of the number which seems so mysterious to our correspondent now.

As you are aware, the filleting now used has the teeth set in ribs, the plain setting not being used, but the old method of calculation is retained for the modern clothing, no matter how widely the old plain setting may be departed from. Thus, take a cylinder fillet, 2 inches wide, with 8 ribs, or 24 crowns in that width, and with 23 teeth in each inch of length measured on one roll. There will be in this clothing 48 crowns in a width of 4 inches. Multiply this 48 by 23, and we have 1104 crowns in 4 square inches, or 276 crowns, or 552 points in one square inch. Dividing the 552 by 5, we get 110, which is the count; and, if you desire to find the number of points per square foot, you can do so by multiplying this 110 by the mysterious 720, which will give 79,200.

Machine for Twisting Horse Hair.

Editor Textile World:

I would like to have the names of manufacturers of "twisting" and "curling" machines, such as are used for twisting horsehair and similar fibres into hanks in the form in which it is offered for sale.

Horse Hair (60).

We should be pleased to put any manufacturers of such machines in communication with our correspondent.

Wants to be a Dyer.

Editor Textile World:

I am trying to learn the trade of hosiery and knit goods dyeing, and would like to have your advice as to the best course to pursue to obtain success. I am at present second-hand in the dye house. I do not know any too much about the business, and have asked the overseer what books it would be well for me to read; he tells me that there is nothing

that I can get hold of that will do me any good. He says that if I find out anything, I shall have to catch it on the fly.

Fast Color (51).

Our correspondent has the right position in which to begin learning the dyer's trade, and his evident desire for information is a strong point in his favor. The advice which his overseer gave him, however, is incorrect. It is a common idea, particularly among dyers, that little can be obtained from books, to assist the dyer in his work. This is a relic of ancient times, when the art of dyeing was a secret jealously guarded, and handed down from father to son. While this view of the trade has to a great extent disappeared, there is still the feeling among some dyers, that books on dyeing are of rather doubtful value. Books alone will not make a dyer competent, but neither will working in the dyehouse. "Fast Color" should apply himself diligently to his duties as a second-hand, and learn all that he can of the practical operations of dyeing; he should study as many books on dyeing as he can obtain, and particularly should he make a practice of keeping a record of his work, the difficulties he meets with, and their remedies. We think that this course followed out with patience and perseverance will make a dyer of him. We should recommend Hummel's work on dyeing, price $1.75, and Knecht, Rawson & Loewenthal's work on dyeing, three volumes, price $15.

Surplus Rolls for Cotton Spinning.

Editor Textile World:

I have read with much interest your reply to "Cover," No. 46, in the January issue. I am of the opinion that there should be enough rollers covered in a spinning room to fill out one mule or frame. These rolls may not be required for months, and then again they may be needed on short notice, as for instance, in case of a small fire. The water used to extinguish a small fire generally injures the covering on a great many rolls, and necessitates their being recovered. Then again, a sprinkler may open, and the water may injure the covering on quite a number of rolls. The extra rolls should be covered and placed in a tight box in a dry place with the ends up to prevent any impression being made on the leather as would be the case if they were laid flat and on top of each other; or they can be laid in racks built in layers to any desired height, the ends of the rolls resting in small grooves, which will hold them in position and prevent any contact. "Cover's" question is rather indefinite, as he gives no details in regard to kind of rollers in use or the size of the yarn spun.

I will suppose that there are four ends to the roll, and will consider only the front roll, or one-third of the equipment of the mule, as the rollers, if not worn too much, can be run in the middle or back roll for some time. One hundred and fifty-six rolls, with four threads to the roll make 624 spindles on a mule. I would suggest that the rolls for 48 spindles be replenished each week. If the rolls are covered in or near to the mill, there should be one week's supply in the room. This will avoid any possibility of an interruption in the supply. This I would consider a very fair estimate for surplus rolls for spinning either hosiery, filling or warp yarns, from 20's to 60's, providing the room is kept at a proper degree of temperature, with good roving, good help, and correct working of traverse motion.

For coarser yarns, down to No. 5, I should consider one roll in ten a fair allowance. There is nothing saved by trying to economize too much on roll covering. It is one of the most important parts of the machine, and upon the condition of the covering depends to a great extent the quality of the work done by the spinning machine.

Southwest (61).

Books on Dyeing.

Editor Textile World:

Please recommend to me a good book on dyeing, treating of anilines, logwood and other extracts.

Cedar (62).

We can recommend either Hummel's work on dyeing, price $1.75, or "A Manual of Dyeing," three volumes, by Knecht, Rawson & Loewenthal, price $15, either of which we can furnish if desired.

Bleaching and Coloring Ivory.

Editor Textile World:

Where can I obtain a book treating of the bleaching and coloring of ivory, and can you give me any information on the subject?

Ivory Black (58).

We believe there is no book treating exclusively of the bleaching and coloring of ivory. The industry is too small to warrant such a book being published. The bleaching and coloring of ivory is simply a branch of ivory carving, and information on the subject can be obtained from works treating of the working of ivory.

Ivory is whitened, or bleached, by rubbing it with pounded pumice stone mixed with water. The ivory is then, while still moist, placed under a glass shade, hermetically sealed, and exposed to the rays of the sun. Unless the ivory is protected by the shade, the sunlight will cause fissures, or cracks. The rubbing and exposure to the sun should be repeated several times if necessary. In addition to this process, one authority recommends soaking the ivory in a weak solution of chloride of lime.

Ivory should be colored before being polished, as it then absorbs the dye much better than after the pores have been closed up by polishing of the surface.

One method of dyeing consists in soaking the ivory for six or eight hours in a solution of alum or vinegar, and then coloring with verdegris, iron salt, or dyestuffs. The aniline dyes produce very bright and fairly fast colors. Ivory can be colored black by soaking it for several hours in a dilute solution of neutral nitrate of pure silver. It is then exposed to the air, and assumes a black color, having a slightly greenish cast. A finer and deeper shade may be obtained by boiling for some time in a solution of logwood, and then steeping in a solution of red sulphate or red acetate of iron. Blue can be obtained by immersing in a dilute solution of sulphate of indigo, partly saturated with potash.

For a green, dip the ivory in a solution of nitrate muriate of tin, and then in a hot decoction of fustic. For yellow, soak in a solution of nitro-muriate of tin, and then boil in a solution of fustic. For fast yellow, steep 18 or 24 hours in a strong solution of neutral chromate of potash, and then immerse in a boiling solution of acetate of lead. Red may be obtained by preparing with tin as when dyeing yellow, and finishing with cochineal. Sadden with potash for a cherry red.

For violet, prepare with tin as above, and finish with logwood. An after treatment in a dilute solution of nitrate muriatic acid gives a purple red. If dark spots appear, rub them with chalk and dye again. When taking the ivory from boiling solutions, it should be plunged immediately into cold water to prevent fissures.

Ivory is very susceptible to the action of dyes and chemicals, and for this reason care must be taken to use only weak solutions.

Book on Feathers, Their Dyeing, Etc.

Editor Textile World:

Quite recently I have had an inquiry regarding feathers, their dyeing and everything, in fact, relating to them. I have searched all the literature at my disposal, but my efforts have so far been very unsuccessful. If you could give me any references regarding feathers that you happen to know of, I would be infinitely obliged to you.

Feather (54).

The only publication that we have in mind at present is "The Practical Ostrich Feather Dyer," by Alexander Paul, $5. This is a very complete treatise, and practically covers this class of work. We can furnish it.

Breaker Card.

Editor Textile World:

Where can I obtain a breaker card 48 inches wide?

Breaker (57).

We have replied by mail.

Washer Felts.

Editor Textile World:

Where can I purchase felts for washers?

Felt (55).

We have replied by mail.

Book on Weaving.

Editor Textile World:

I am thinking strongly of buying a good book on weaving, and want to select the best one, one that is especially good on sizing and warping. Which would you recommend, Marsden's Treatise on Cotton Weaving, or Taylor's Weaving and Designing?

Weaver (53).

Each of these books contains a great deal of useful information. Marsden's treats on the special subjects of sizing and warping more fully than Taylor's. The latter gives more attention to designing and fancy weaving than Marsden's.

Mill Cost Sheets.

Editor Textile World:

Please advise me as to the best method of calculating the cost of manufacturing silk goods, with special reference to the distribution of the general expense among different fabrics made in the mill.

Broad Silk (63).

In the January and February, 1900, issue of the Textile World, there appeared articles on the calculation of the cost of woolen and worsted goods, which explained a system the principle of which can be applied advantageously to the calculation of the cost of manufacturing any textile fabric, and we refer our correspondent to these articles. The principle on which that system was based consisted in selecting for the purpose of calculating the general expense, the department in the mill which afforded the best measure of production. This department should be the weakest one, or, in other words, the one in which the smallest quantity of goods could be manufactured. To illustrate our point: In a

mill where the looms can weave more yarn than the spinning room can produce, we would select the spinning room as the best measure of production. On the other hand, in a mill where a surplus of yarn could be spun above what the looms could weave, the weaving room would furnish the best measure of production. In the latter case, the general expense would be charged to the different fabrics in proportion to the number of picks in the goods. We think the articles referred to will give our correspondent the necessary information, by which he could get up a system of cost calculation suited to his own particular necessities. Any system adopted must to a great extent be modified to meet the special requirements of the mill in which it is used.

New Publications.

Cotton Facts. Alfred B. Shepperson, Cotton Exchange Building, New York, N. Y. The 1900 edition of this work has been received, and is unusually complete. It is so well known to the trade that no mention of its scope is necessary here. It is a very valuable book of reference for the textile trade. It is very carefully compiled and brought up to date, and no one in the cotton trade can afford to be without a copy.

Rubber. The Boston Belting Company, Boston, Mass. This is a twelve page pamphlet, containing a price list with illustrations and description of the various styles of rubber mats manufactured by the Boston Belting Company. Some very attractive styles are shown, and it is a book that cannot fail to be useful to the trade.

Boston Steel Plate Fans and Steam Engines, Catalogue 51. Boston Blower Company, Hyde Park, Mass. This is a catalogue of 54 pages, in which are described and illustrated the various types of steel plate fans manufactured by the Boston Blower Company, Hyde Park, Mass. Valuable tables are added, giving the weights of round galvanized pipe and elbows, areas of circles and equivalent areas of piping.

The Tradesman. The tradesman begins the new year and the 20th century with a very interesting issue, containing many valuable articles accompanied with fine half-tone illustrations which add much to their value. Space does not permit of reference to all, but among them may be mentioned the following: The Development of the Mineral Resources of the South; The Fertilizer and Phosphate Industry; Technical Education in the South; Best Occupations for Negroes; Combined Cotton Seed Oil Mills and Ginning Plants; The Woods of the Philippines; The Manufacture of Brick in the South; Electricity at Tuskegee Institute; Electrical Distribution of Power; Arrangements of Mechanical Power.

Graphite as a Lubricant. The Joseph Dixon Crucible Company, Jersey City, N. J. This pamphlet of 44 pages is the seventh edition, and while including the information which previous issues have contained, has in it same new features which add to its value. The subject of lubrication is an important one, and this little work cannot fail to shed light upon it.

Development of the Electric Drive. By Sidney B. Paine, General Electric Company, Schenectady, N. Y. This is a booklet of 25 pages, in which is described and illustrated the development of the electric drive. It will prove useful to power users throughout the country, and we recommend that manufacturers secure a copy of it.

Dockham's Directory of Textile Manufacturing and Dry Goods Trade. Memorial Number. C. A. Dockham & Co., 131 Devonshire Street, Boston. Mass. Price $6. Our old friend, Dockham's Directory, makes its appearance promptly; the directory features are evidently compiled with the usual care and accuracy. This, which is the 18th edition, is particularly interesting as marking the completion of 35 years since this pioneer directory was first published. A list of the textile mills which appeared in the first edition, of 1866, is included in the present one, and an examination of the names there, recall many memories to the old veterans in textile manufacturing, and a comparison between the new and the old list shows in a striking manner not only a growth of the textile business, but also of the many vicissitudes which have swept out of existence the firms of 35 years ago, and brought new ones into the field. The frontispiece is a very good portrait of the founder, C. A. Dockham, who enjoys the distinction of being the first one in this, or any other country, to compile a directory devoted to any special industry.

Calendars for 1901.

Estabrook & Eaton:—A memorandum calendar which will be found useful by busy men as a means of recording future appointments or other matters that require attention on particular dates.

Standard Machine Company:—A very striking calendar of moderate size, and so lettered that "He who runs may read."

A. G. Van Nostrand's Bunker Hill Breweries send us a very neat calendar for 1901.

Lynn Business College, Lynn, Mass., have issued a calendar, in which twelve separate cards, corresponding to the twelve months, are enclosed in an attractive case. Each card can be brought into position when desired.

C. J. Peters & Son, electrotypers and typographers, 145 High Street, Boston, have sent us a very attractive calendar for the coming year.

Birch Brothers, Somerville, Mass., are sending to the trade two very attractive calendars for 1901. They are calculated to suit widely different tastes, one being a domestic scene, in which a dog and a baby are facing each other with every evidence of mutual confidence. The other is decorated with a design representing the American eagle perched upon

the American flag which is calculated to appeal to all patriotic Americans. This calendar is emblematic of national expansion, and probably was suggested by the rapid manner in which the business of Birch Brothers has expanded during 1900.

Whitin Machine Works, Whitinsville, Mass., have issued a convenient calendar containing illustrations of the various machines manufactured by them.

The Howard & Bullough American Machine Company have sent us a 1901 diary, which contains useful roving and slubbing tables, postage rates, and a calendar for 1901. It is neatly bound, and its size suits it for pocket use.

Akron Chemical Company, 8 Doane Street, Boston, Mass., are sending to the trade a neatly bound and convenient diary for 1901. In addition to the diary, there are useful tables, showing the population of the states and territories, rules for computing interest, interest laws, weights and measures, record of the temperature and rain fall in the United States, and postal distances and time from New York City.

F. Muhlhauser & Company, Cleveland, Ohio, manufacturers of fine wool stocks, have issued a convenient pocket diary, provided with a pencil and contains valuable information in regard to the rates of postage, weather signals, internal revenue tax, etc. In addition to the blanks for the diary, there are added very useful forms for bills receivable and payable, cash account, sales, and insurance policies.

Philip Carey Manufacturing Company, manufacturers of Carey's magnesia, flexible cement roofing, send us an attractive calendar, representing a force of men applying Carey's roofing on buildings.

Lamb Knit Goods Company, Colon, Mich., have issued a calendar for 1901, containing portraits of different representatives of their firm.

American Supply Company:—This is a very neat and attractive diary, with celluloid cover, in a size suited for pocket use.

New Dye Cards Received.

Diamine Nitrazol Brown T. Wm. J. Matheson & Co., Ltd., New York. This card contains eight samples of cotton and cotton yarn colored with Diamine Nitrazol Brown T. Formulas and directions accompany the same.

Cyanole Green 6 G. Wm. J. Matheson & Co., Ltd., New York. Bulletin No. 79 contains two samples of dress goods dyed with Cyanole Green. These bulletins are issued monthly by Messrs. Matheson & Co., who will be pleased to put the address of interested parties on their mailing list.

Cheviot yarn dyed by one-bath process. Wm. J. Matheson & Co., New York, shows 66 samples of worsted yarns dyed various shades in one dip. Formulas and directions are also given.

Anthracene Acid Colors and Chrome Black. William J. Matheson & Company, Ltd., New York, N. Y. This sample card shows eight samples of wool goods dyed with Anthracene acid colors. Anthracene Chrome Black formulas and directions for dyeing are given both in English and German.

Immedial Black on Piece Goods. William J. Matheson & Company, Ltd., New York, N. Y. This circular gives directions for dyeing with Immedial Black and piece goods in the jigger, by the use of a standing bath, and should be in the possession of manufacturers treating their goods by this method.

Immedial Colors on Velvet. Wm. J. Matheson & Co., New York. This card contains 47 samples of cotton velvet dyed on the Jigger, various shades, ranging from a delicate grey to black. While the samples are velvet, the formulas and directions for dyeing are equally well adapted for other goods.

Industrial News.

—The New York office of the Viennot Advertising Agency has been removed from 127 Duane St., to Room 719 Temple Court, where better accommodations for convenience of their clients and friends are afforded. Joseph H. Williamson is the business manager of this agency.

The Subject of Belt Tighteners.

The Cling-Surface Mfg. Co. state that the only excuse any person has for using a tightener is, that either a belt slips even under all possible tightening strain, or, that he wishes the increased power which a greater arc of belt and pulley contact will give. But neither of these excuses will stand against Cling-Surface because Cling-Surface stops all slip of a belt even when running easy, which meets the first proposition, and second, Cling-Surface allows a belt to run so slack that it can have a greater arc of belt and pulley contact than is possible with an idler, and that, with an easy belt.

The Cling-Surface Co. refer to the following letters: J. E. Knox & Co., Lynn, Mass., "We run two 7 ft. grind stones and always used idlers. Cling-Surface enables belts to run below idlers and not slip." Geneva, Ind., Milling Co., "This morning our mill is running without the idler, with 4 feet sag in belt and no slipping—due to Cling-Surface." Camp & Hinton, Lumberton, Miss., "The idlers have been raised from our 26-in. and 48-in. belts since using Cling-Surface but there is no slipping." Canton The Hollow Brick Company, New Bethlehem, Pa., "We have removed the idler, run the belt slack and no slipping after using Cling-Surface."

Bleaching Vegetable Textiles.

A patent has been issued in England for saving alkaline lye in the bleaching process. The proportion of liquor to goods is so far reduced that the process becomes one of steaming (in contact with the liquor) rather than boiling, and the circulation of liquor is dispensed with. At the same time other reagents are associated with other reagents. For linen webs, for example, a solution of from 1 to 2 per cent. of caustic soda is thickened with water glass and a mineral or other oil emulsified in a solution of soap. This mixture is gelatinous at 30-40 deg. C., and is placed in the box of a starch mangle. The linen webs are run through it at the width, then

batched, and subjected to the action of "dry" steam at about 4 lbs. pressure of one-half hours. By this treatment, the non-cellulose constituents are disintegrated, and are cleared away afterwards by an ordinary open boil.

National Association of Wool Manufacturers.

The headquarters of this association have been removed from 70 Kilby Street to new and commodious offices in the Essex Building, 683 Atlantic Avenue, corner Essex Street, and directly opposite the west entrance to the new South Terminal Station. Wool manufacturers and others interested in the industry are invited to make the new offices of the National Association a headquarters in Boston. The offices are most attractive, comfortably fitted up and very convenient to the wool district. They are just across the street from the Textile World offices. The Association has a valuable reference library, files of papers, and wool manufacturers, whether members of the association or not, will find a cordial welcome from Secretary North or Mr. Battison.

Textile Designing and Silk Manufacture.

Jose L. Morillo, for the last five years a public designer in Paterson, N. J., having studied in the schools of Como (Italy), under the well-known Prof. Pietro Pinchetti, and having made a practice in Lyons, Zurich and Milan, has now, in addition to his business, taken charge of the class for textile designing and silk manufacturing in the School of Music, Languages, Art, etc., opened last month by Prof. Wiske at Patterson, N. J. The subjects especially taught in the class will be to give a good general notion of the different textile fibres, manipulation of silk and dyes, disposition of colors, the dissection of any kind of cloth, plain, armure or figured and composition of the same; mounting of jacquard harnesses and disposition for any cloth required; calculations for warping, dyeing, etc., and general administration and superintendence of a mill, and finally a thorough ground work in jacquard designing and card cutting.

Successful Patent Attorney.

Mr. E. G. Siggers started in business on his own account May 1, 1899. Previous to that time he had been for many years a member of one of the largest patent soliciting firms in the country, occupying the position of managing partner, and having exclusive charge of all patent infringement and interference cases handled by the firm. He has an intimate and extensive knowledge of every department of the patent business, and feels himself competent to successfully handle applications for patents of the most intricate and technical nature, and pledges to his clients the same unremitting care and attention which has marked his conduct of business in the past. In his office he has a corps of competent assistants who have been trained under his direct supervision. As to his financial responsibility, he refers to the Columbia National Bank and the Washington Loan & Trust Company, of Washington, D. C., as well as to both Dun's and Bradstreet's commercial reports, where his rating can be found. His office is in the same building with the Washington office of the Bradstreet Company. He is the publisher of the Inventive Age, the only journal published at the National Capital, outside of those published by the government, devoted exclusively to patents and inventions. He also publishes a 48-page pamphlet on "How to Obtain Patent, Caveat, Trade Mark, and Copyright Protection, with Decisions in Leading Patent Cases," a book which should be in the hands of every inventor. Sample copies of the Age and the pamphlet will be sent to any address free of charge by writing to E. G. Siggers, Patent Lawyer, 918 F Street, N. W., Washington, D. C.

G. E. Manning Again With the Foster Machine Company.

The Foster Machine Co., of Westfield, Mass., has again secured the services of Mr. G. E. Manning, so long associated with this company and identified with the Foster winder. He will act as their traveling salesman, and is now visiting the trade in the company's interest and particularly in behalf of their new 1900 winder, in which we understand radical improvements have been made.

New Corporation.

The Douglas Mfg. Co., of Fall River, Mass., has recently been incorporated under the laws of Massachusetts, with a capital stock of $6000. The new company will continue the business already established of manufacturing and selling all kinds of paper tubes, cop tubes, cone tubes, taper tubes, mailing tubes, etc. A specialty will be made of all kinds of special tubes to order. The company has as manager, Mr. John H. Douglas, formerly of the Fraprie-Douglas Co., and has secured the services of M. E. H. Thorn, for many years in the employ of Messrs. Haworth & Watson of Lowell, Mass. Mr. E. B. Remington, president and Albert A. Harrison, treasurer. The directors are: E. B. Remington, A. A. Harrison and John H. Douglas.

Examiner of Machinery.

Henry A. Bodwell, Lowell Textile School, Class of 1900, has been appointed the examiner of machinery for the Port of Boston.

Mr. Bodwell was born in Keene, N. H., November 22, 1878, and moved to Andover, Mass., when very young. He attended the Punchard school for four years, graduating in 1896; after this he worked for one year at the Washington Mills, Lawrence, Mass., wool sorting, entering the Lowell Textile school in 1897 where he took the Wool Manufacturing course. After graduating, he went back to the Washington Mills where he was employed when news came that an ex-

amination was to be held under the Civil Service rules for an examiner of machinery for the Port of Boston. This position requires a particularly good knowledge of worsted machinery. Much other textile machinery comes through the Boston Custom House as well as machinery of all kinds. Although Mr. Bodwell had specialized on worsted and woolen spinning at the school, the course was sufficiently broad to embrace a study of mechanics in general, including electric and steam machinery, so that at the examination, of fifteen competitors he finished first with a rank of 94 per cent.

Meeting of Buffalo Forge Company's Representatives.

To secure the many advantages of personal acquaintance and free exchange of ideas among its various representatives, the Buffalo Forge Company during the first week of the new century called together its entire staff of traveling men and other officials The meeting resulted in a better acquaintance and closer contact between the various officials of the company, traveling representatives and the heads of departments as well, some of whom never met before, while securing at the same time the mutual benefits of a thorough discussion of the engineering and commercial problems encountered in the field of heating, ventilating and drying, mechanical draft, forge installation, and the similar lines of the company.

The various engineering problems encountered in planning and installing heating and blast plants of various sorts were discussed in the light of that familiarity which comes from practical experience with varying conditions constantly arising. The opportunity given for the presentation of individual ideas upon the subject of procuring customers and following up business, as well as upon the best methods to be employed in different cases was likewise made use of to the benefit of all present. Mr. D. W. Roper who for the past year has been traveling in England and Europe in the interest of the Buffalo Forge Company returned to this country in season to attend the meeting at Buffalo and was able to impart much that was of interest and value concerning trade conditions and outlooks across the Atlantic. The gathering looking upon its practical side, commemorated the close of a decade successful beyond the highest anticipations of the Buffalo Forge Company, and fittingly marked the advent of a century of which the bright prospects for still greater prosperity are most apparent.

One evening the party occupied four boxes at a leading Buffalo theatre. On the following evening a banquet at the Iroquois Hotel was tendered the representatives, covers being laid for thirty. Mr. H. W. Kreinheder, of Buffalo, who was instrumental with valuable aid and suggestions in the founding of the Buffalo Forge Company, was the guest of honor and officiated as toast master, while on his right and left were seated Messrs. William F. Wendt and Henry W. Wendt, senior and junior members of the firm. Mr. Kreinheder was especially happy in his selection and presentation of toasts, and before the evening's pleasures had been brought to a close every one present had been heard from. The phenomenal growth of the company as brought out by the contrast between the past and present conditions, as well as its present prosperity and bright prospects were the main themes of the post-prandial remarks. Numerous facts concerning the early history of the firm were mentioned which were doubly interesting as portraying various phases in the growth and development of a large industry. The company had its beginning in a small office in Buffalo about a quarter of a century ago, the work being done in an outside shop. After one change, the shop and office were located in a small two-story frame building at the corner of Broadway and Mortimer streets, Buffalo, and since that time the company has expanded until the shops now occupy the entire block bounded by Broadway, Mortimer, Chaplain and Tousey streets. So rapid has been the growth that the original frame building had to be removed to make room for improvements, and even now with recent completion of a large six story shop the company is hampered for lack of space. Such were a few of the topics touched upon at the banquet. The gathering was a great success in every respect, and of no small benefit to all who were fortunate in attending.

Enlargement of Plants.

Wolstenholme & Clarke, of Philadelphia, who have built up a fine reputation for worsted yarns, are increasing their facilities and installing one of the Hurricane automatic wool dryers, with improved self feed, furnished by the Philadelphia Drying Machinery Company. Haslam & Querner, proprietors of the Rainbow Dyeworks, are installing two of the Hurricane yarn dryers, to accommodate their increasing business.

—The Arlington Machine Works report that they have made shipment of all the frames and other parts for the Washing Machines for the Slatersville Finishing Works. They expect to ship more machinery to this concern during the week.

—Pres. C. S. Holden of the Aetna Knitting Co., Worcester, Mass., has added a new set of cards, several hundred spindles, and 20 knitting machines, owing to increased business. This makes a total of 3 sets and 80 knitting machines in this plant.

Why Do Belts Slip?

It is simply because the belt fails to get a grip, as it were, on the hard slippery surface of the pulley? The trouble is with the pulleys, not with the belt. The remedy, therefore, is to give the pulley the right kind of surface.

Warren's Pulley Cover is painted on the surface of the pulley, dries there, and it is claimed gives the pulley the kind of surface on which a belt will hold without slipping. This surface is dry, hard, not in the least sticky—"tacky," and once properly applied to an iron, wood or paper pulley, lasts a long time without renewal.

The Warren Manufacturing Co., 26 Jackson St., Chicago, Ill., manufacturers of this Cover, are willing to prove

the above statement by a practical trial, without expense to the mill owner. Drop them a postal and they will send you further information about the Cover, and make you a special proposition covering a trial. It costs nothing to find out about it.

—The American Bridge Company announce the following appointments: E. W. Stearns, Manager of the East Berlin, Ct., plant; Frank S. Moore, Manager of the Lafayette, Ind., plant; all the Pittsburg plants have been consolidated into one, and J. W. Walker appointed as Manager; Mr. C. A. Billings, Assistant Treasurer for the New York District; H. W. Post, Manager of the Post & McCord plant.

Clemson College.

The textile school at Clemson College, S. C., has recently been enlarged. The General Fire Extinguisher Company, of Atlanta, Ga., donated 275 Grinnell sprinkler heads for the new building. In addition to these, the Aerophor Moistening Company, of Boston, Mass., contributed a complete system of humidification, and a number of the leading textile machinery builders have given the school various up-to-date machines, which will doubtless lead to their introduction into the mills of the South. Two more jacquard looms will soon be installed. One of these will be "tied up" for weaving table damask. This loom will weave damask 65 inches wide, with seven-inch borders. The fancy cotton looms are from the Kilbourn-Lincoln Company, the spinning frames from Fales & Jencks Machine Company, and the double cylinder jacquard looms from Thomas Falcon & Sons of Philadelphia. The school, which is the pioneer textile school of the South, is in a very prosperous condition at present, and is doing a good work in training the youth of the South in cotton manufacturing.

American Bridge Co.

The American Bridge Company have grouped all their eastern plants in one section, and have appointed Mr. A. J. Major, formerly manager of the bridge and construction department of the A. & P. Roberts Company, as manager of all of these plants, which include the following: The Pencoyd plant, the East Berlin plant, the Buffalo plant, the Edge Moor plant, the Elmira plant, the Groton plant, the Hilton plant, the Horseheads plant, the Trenton plant, the Post & McCord plant, the Rochester plant, and the Union plant.

—The Howard & Bullough American Machine Company, Pawtucket, R. I., report the following orders recently received: Roanoke Cotton Mill Company, Roanoke, Va., entire equipment, which includes revolving flat cards, electric stop motion drawing frames, slubbing frames, roving frames, spinning frames, and twisters. Mechanics Mills, Fall River, Mass., revolving flat cards; Ensign, Bickford & Company, Simsbury, Conn., revolving flat cards; Hall & Lincoln, Moodus, Conn., revolving flat cards and electric stop motion drawing frames. Middleburg Mills, Batesburg, S. C., repeat order for picking machinery.

—Chas. F. Grosvenor, Palmer, Mass., expects to put a carbonizing plant into his shoddy mill here.

Franklin Bleaching and Finishing Works.

These new works are just starting up at 70th St., near Haverford Road, Philadelphia, and have a very complete equipment of modern machinery for bleaching and finishing cotton and linen fabrics. The officers of the company are thoroughly familiar with the business. Mr. Charles A. Rice, formerly connected with the Southbridge Printing Co., is president; John McGill, Jr., well-known to the trade in Philadelphia, is secretary and treasurer, and William Bell, formerly connected with the Aberfoyle Mfg. Co., is superintendent.

Mill Architects and Engineers.

The firm of Lockwood, Greene & Co., of Boston, is so well known to the trade that no textile manufacturer needs any introduction to them. In their new quarters, at 93 Federal St., where they have the entire sixth floor, there is probably no other firm better equipped for handling their work more comfortably and expeditiously. Promoters of new enterprises can have every assurance that work entrusted to this firm will be handled purely from the standpoint of the client's interest and with the result of many years' experience and thoroughly up-to-date ideas.

Improved Gas Light.

The Brunner Monatschrift fur Textil-Industrie, gives a description of a new method of lighting by gas. It is named the Millennium Light. It is said to be steadier, clearer and cheaper than arc or incandescent, electric or the ordinary gas light. The following estimate of comparative cost for 8000 candle power per hour is given by the Austrian journal:

Electric arc,	$0.97
Electric incandescent,	3.57
Gas,	.65
Millennium light,	.35

A letter from a firm using the new light in Vienna, is given, in which it is stated that the light is giving good satisfaction, and while it has been installed for too short a time to determine cost of the light, they have no doubt it will be much lower than the cost of gas.

—The American Bridge Company will furnish the steel work for the ten story office building to be built by the Mutual Savings Bank at the corner of Market and Geary streets, San Francisco, Cal.

—The American Bridge Company announces that their New York Contracting Office will hereafter be in charge of S. Fischer Miller, formerly with Messrs. Milliken Bros.

—The Badger Brass Mfg. Co. of Kenosha, Wis., have just installed a No. 1 Special Cross Oil Filter, purchased from The Burt Mfg. Co. of Akron, Ohio.

Mill Brushes.

The average mill man is not an expert on brushes. He is a good deal in the position of a purchaser of a suit of clothes. He has to take a great deal for granted that he knows little about. For this reason it is desirable to trade with such concerns as have a well-established reputation and long years of experience in dealing with textile manufacturers. Such a firm is W. E. Warner & Co., 136 Centre St., New York, who make all kinds of mill brushes and know what the wants of textile manufacturers are. Their catalogue shows a wide range of the different forms used in this trade. Among their specialties are brushes for carpet manufacturers.

Spool Cotton.

The Standard Thread Co., of New York, make a specialty of spool cotton for the manufacturing trade. They meet competition in price and quality. They are prepared to furnish their goods in any form desired by the trade, making prompt deliveries. It very frequently happens that they can offer some special advantage to manufacturers, and they invite correspondence.

Fidelity Finishing Works.

This new concern is now well under way and handling a very satisfactory amount of business in the trade. W. C. Melcher is the proprietor. They are located at the southwest corner of Mascher and Turner Sts., Philadelphia, where they have equipped the lower floor of the Dolan Mill with new finishing machinery, and are prepared to handle all classes of cotton and woolen dress goods, cassimeres, worsteds, etc.

Cotton Machinery.

The Howard & Bullough American Machine Company, Ltd., Pawtucket, R. I., report the following orders recently received: Humboldt Cotton Mills, Humboldt, Tenn., complete equipment of picking card room and spinning machinery; Willimantic Linen Company, Willimantic, Conn., spinning frames for the extension recently built to that plant. They have also received the following repeat orders: Mechanics Mills, Fall River, Mass., revolving flat cards; New York Mills, New York Mills, N. Y., picking machinery; Richmond Spinning Company, Chattanooga, Tenn., cotton spinning machinery.

Association of Textile Workers.

A number of mill overseers and second hands have formed an association at Lowell for the purpose of mutual instruction in textile manufacturing. We understand that membership is open to residents of any section. The intention is to hold frequent meetings at which lectures will be given on various subjects relating to textiles. Such organizations deserve to be encouraged. They serve to arouse a desire for self-improvement among mill workers, and afford an excellent means of instruction. This particular enterprise is only another proof of the good work done at Lowell in behalf of textile education.

Extension of Plant.

The Dodge Manufacturing Company, Mishawaka, Indiana, is about to extend its machine shop and foundry. The two buildings will be practically duplicates of each other, 200 x 125 feet, of steel construction, with gravel roof and side walls of brick. Each will be provided with a 35 ton electric traveling crane, together with the necessary heating apparatus and sprinkler equipment. A new 72 inch cupola will be installed in the foundry, and the electrical equipment of the plant increased by the addition of a 150 K. W. generator and engine. It is also proposed to increase the main driving power by the addition of a 28-in. by 48-in. Corliss engine.

Bids for the construction and equipment are now being considered.

The Morse Incandescent Lamp Adjuster.

This device for raising and lowering incandescent lamps has been in use now long enough to test thoroughly its merits, and, in fact, an inspection is sufficient to demonstrate its worth, as the principle upon which it works has long been utilized to advantage in the well known spring curtain roller. The objections to the various devices which have been used for this purpose heretofore are well known. Nearly all of them are very apt to wear the covering and insulation from the wire, thus causing short circuits, with the consequent danger of fire. The disposal of the incandescent lamps in our mills during the day has been a matter of much difficulty, as allowing them to hang down in the position where they are when wanted when the light is on, brings them in the way of the operative, and results in breakage of the lamps and the collection of waste upon them. The illustration shows the Northrop loom equipped with this lamp device, with a lamp raised out of the way. It can be lowered simply by taking hold of the bulb and pulling it down in the way that a curtain is manipulated, and when once down it can be raised in an equally quick and easy way. The device is in use in the office of the Textile World, and we can speak from actual experience of its merits. No extensive description is necessary, as its merits are well known, and the illustration speaks for itself. It is manufactured by the Incandescent Electric Manipulator Co., 116 Bedford St., Boston, Mass.

—Birch Bros., Somerville, Mass., are building machinery for the Nashua Bleachery, to replace other machinery.

—The N. Y. Central & Hudson River R. R. Company has contracted with the American Bridge Company for two Draw Bridges, which are to be operated by gasolene engines; one of them to be located near New Hamburg, N. Y., and the other one near Little Ferry, N. J. Both are Through Plate Girder Bridges with double track.

Record of Atmospheric Conditions.

The accompanying diagram shows a form used for keeping a record of the temperature and humidity of the various rooms in the mill, and which we believe will be greatly appreciated by manufacturers. It allows for taking a record three times a day for each day in the week, which in comparison with the "out doors" conditions, will be very interesting and instructive as well, to those who are not aware of the varying conditions which are common in the different departments of the mill. The American Moistening Co., Boston, Mass., will be pleased to furnish these blanks to any one desirous of using them. By the adoption of their system of humidification, the proper conditions for the various departments may be maintained at all seasons of the year.

The diagram below is one-quarter the regular size.

New Process of Retting Flax.

A process for retting flax has, according to the Deutsche Farber Zeitung, been tested in France, with satisfactory results. The process was brought out in 1895, and the experiments conducted in an apparatus which held about 90 lbs. of the material.

The bundles of flax were packed in the holder in an upright position, and then covered with water heated to 35° C. Fermentation is then effected and allowed to continue for about 48 hours, when the liquor is run off, and fresh water of the same temperature supplied. When the retting is completed, the liquor is again run off and the material is thoroughly rinsed by a stream of cold water; then without being removed from the machine, the flax is dryed by forcing hot air through it. The whole operation occupies about four days.

American Moistening Company.

150 Devonshire Street, Boston, Mass.

SYSTEM OF HUMIDIFICATION.

Record of Temperature and Humidity for Week ending ..... 190 ..... *Mill*

Date	Time	Out-doors: Thermometers Dry	Out-doors: Thermometers Wet	Out-doors: % Humidity	Thermometers Dry	Thermometers Wet	% Humidity	Thermometers Wet	Thermometers Dry	% Humidity	Thermometers Wet	Thermometers Dry	% Humidity	Thermometers Wet	Thermometers Dry	% Humidity	Thermometers Wet	Thermometers Dry	% Humidity	REMARKS
MONDAY																				
TUESDAY																				
WEDNESDAY																				
THURSDAY																				
FRIDAY																				
SATURDAY																				

Back Filling Machine.

The Arlington Machine Works have recently made patterns of a back-filling mangle which is being well received by the trade. This machine is claimed by the builders to be the most satisfactory machine made today for shoe goods, etc., and its construction has been given the most careful attention from the makers to enable it to do the best grade of work. The makers have supplied the Edgewater Print Works of Philadelphia, with this machine, and have just delivered one to the new Franklin Bleachery in the same city, and are completing a machine for the new bleachery and finishing works at Slatersville, R. I. All these machines have been made for goods 50 in. wide, but the makers are now getting out a machine for goods 65 in. wide.

According to the German journal, the inventor of this process established a retting plant at Steenbecque, France, having a capacity of 4400 lbs. raw flax at one operation. The flax retted there was spun by a Mr. Dickson at Dunkirk, who states that he could spin flax retted by the new process to No. 90s yarn, while the same flax retted in the Lys would spin to No. 70 only.

Tests as to the strength of the yarn, gave the following results:

No. of Yarn.	New Process.	Retted in the Lys.	Superiority of New Process.
50	35½ ozs.	31⅞ ozs.	11 1/9 per cent.
80	20⅛ "	16¼ "	20 5/13 "
90	18 "	13 "	37 7/13 "

The new process flax can be bleached much whiter than the Belgian material. The cost of the process is said to be about 29 cents per hundred pounds, of which 23 cents is for fuel.

Aniline Black Spots.

Opodeldoc is recommended for the removal of aniline black spots from clothing or the skin which may have been caused during dyeing process. Opodeldoc consists of a mixture of soap and camphor in alcohol, mixed with sal-ammoniac, glycerin and ether. The camphor, glycerin and ether may be dispensed with.

Continuous Bleaching.

To avoid the use of high pressure keirs for bleaching, Henry Hadfield, of Stockport, England, has patented a process in which acetic acid plays an important part. The cotton is first passed through dilute hydrochloric acid of about 1.4 deg. B., and then stacked wet for a few hours. It is then rinsed in water, passed between wringing rolls and then passed in rope form through a series of six vats containing boiling caustic soda lye of 1.4 deg. B. The cotton lies in coils at the bottom of each vat and passes from one to another through rings of porcelain. This completes the first stage of the process. The next begins with a thorough washing, followed by a passage through a bleaching powder bath. Leaving this, the cotton passes through a chamber full of steam and the vapor of acetic acid. Here soluble acetate of lime is formed in the fibre, and the development of free chlorine and hence the bleaching is much facilitated. The final process is merely rinsing and drying. It will be observed that the use of high pressure boilers, and of soap, is entirely avoided, and thus a great saving is effected.

Indigo White.

A French patent has been taken out for storing indigo-white in a stable and concentrated form. The solution of indigo-white from the vat is evaporated down or precipitated with acid, and then mixed with an appropriate reducing agent, such as hydrocalcic sulphite or tin salt. The hydrocalcic sulphite is mixed with its own weight of indigo-salt, and the mixture is preserved in closely stoppered vessels to exclude the air. A very good precipitant for the indigo-white is formaldehyde or benzaldehyde, as the aldehydic compound of the indigo-white which then goes down is less prone to oxidation than the indigo-white itself.

Peat Wool.

The natural color of this product makes it difficult to dye light shades on it, but medium and dark shades can easily be produced. The wool is very durable, but coarse and brittle. It is easily mixed with other fibres, but if dyed it should always be dyed by itself, whether it is mixed with other materials afterwards or not. Peat wool spins well, but it will not felt, a point which has to be borne in mind in using it. It is not so cheap as might be supposed on account of the waste which is unavoidable in the processes of working it up into a textile fibre.

The Bleeding of Logwood Iron Black on Woolens.

It has been said that this is caused by the use of too low a temperature, so that the logwood is not sufficiently fixed. This seems to be the case, as when the vat is boiled by a fire underneath, the bleeding is rare, and results mainly from imperfect previous cleaning of the material, so that it contains alkali. Pieces that bleed, says the Dyer and Calico Printer, are best passed through an old mordant bath, and then an old dyebath, and well boiled in each. In boiling by direct steam the temperature is always lower than with a naked fire, and logwood iron black requires a full boiling temperature. That being given, there will be very little fear of bleeding.

Waterproofing Fabrics.

Serkowski's new waterproofing process is carried out as follows:—Coat the fabric with a solution consisting of 100 parts of benzole, 5 to 25 parts of talc, and 5 to 25 parts of lanoline, applied warm. Dust the fabric with powdered talc, and force the latter into the pores of the former by strong pressure. If the texture of the cloth be open, both these operations must be repeated. When dry, paint the fabric with a second solution, consisting of 100 parts of benzole, and 5 to 25 of gutta percha or balata; then press and dry. A fabric so treated is said to retain its suppleness, to be perfectly waterproof, and, to some extent, fireproof.

Testing Oils.

A good test for oil is to place single drops in line upon a piece of plate glass about 8 inches wide and from 24 to 30 inches long, one end being raised from six to eight inches to form an inclined plane. The drops of oil start from the top of this inclined plane upon a race with each other. The first day sperm oil will be found in the rear, but after a while it will catch up and overtake the rest, and will even be found in motion after the other oils have dried up. An oil having a light body runs quickly and dries quickly, but an oil that has both body and a free flow will readily be detected by this test. An oil may have a good body and yet have a tendency to gum badly, which quality will also be easily detected upon the glass. The oils should be covered, says the Textile Manufacturer, from the dust while these tests are being made. A good test for the presence of acids is to put small quantities of oil in copper dishes, which are easily made by depressing bits of sheet copper with a round-faced hammer. If acid is present it will attack the copper and produce verdigris.

—The American Bridge Company has closed a contract with the Crown Agents for the Colonies of Great Britain to furnish and erect on the line of the Uganda Railway in Africa 27 viaducts. This will require about 6,000 tons of steel work. These viaducts will consist of plate girder spans on towers; the highest tower will be 112 feet. Sir A. M. Rendel & Company, of London, England, are the engineers for the Crown Agents.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Alexander City. The Alexander City Cotton Mills, mentioned in previous issues, have been formally organized with D. L. Lewis, president; J. C. Maxwell, treasurer and B. P. Lewis, secretary. Plans have been completed for a 10,000 spindle plant for manufacturing hosiery yarns, and contracts will soon be let for erection of buildings and machinery.

—Alabama, Castleberry. Negotiations are being carried on by E. and Elisha Downing, relative to establishing a cotton factory with capital stock of $100,000.

—*Alabama, Huntsville. The new building for the Lowe Manufacturing Co.'s new plant is nearly completed and work will start on installation of machinery at an early date. It is expected hat the mill, which will manufacture fine cotton yarns, with equipment of 12,000 spindles, will be ready to start operations by April.

—*Canada, Montreal. The Montreal Cotton Company is erecting two new mills, one for spinning, with equipment of 36,000 spindles and one for weaving, wi... 850 looms. A new dye house will also be built. They expect o begin production of goods about August, 1901. Nearly all of the machinery has been contracted for.

—*Connecticut, New Haven. The Pond Lily Warp Company, which has been incorporated with a capital stock of $10,000 with W. H. Forsyth, president, and Sherman T. Foote, treasurer, purchased the warp business of the Pond Lily Company and will expand the plant. They started operations January 1st, making cotton warps, chain or skein, colored or uncolored, on spools or beams. Walter F. Slade Co., are selling agents .

—Georgia, Cuthbert. A committee, of which J. D. Gunn is acting as chairman and R. I. Moye, secretary, has been appointed to solicit subscriptions toward capital stock of a $100,000 cotton mill to be erected at this place.

—*Georgia, Eastman. Contracts have been let for the erection of the Eastman Cotton Mill Company's plant. This concern will manufacture sheetings, shirtings and yarns.

—*Georgia, Eatonton. The building for the Quintett Manufacturing Company's yarn mill, which has been undergoing repairs and enlargement, is completed and ready for installation of the machinery. They contemplate beginning production of yarn about April, with capacity of 1250 pounds per day.

—*Georgia, Rome. The machinery is about to be installed in the new plant of the Anchor Duck Mill.

—*Illinois, Zion City. In addition to the manufacture of laces, the Dowie lacemaking establishment will make all kinds of carpets, hosiery, etc. Work is being pushed on the temporary frame structure now under construction. They expect to have the plant underway April 1st.

—Louisiana, Ruston. We have been informed by S. C. Huey that he is interested in establishment of a plant here for manufacturing cotton and woolen goods, with capacity of 5000 lbs. per day, making sheeting, plaids, stripes, cottonades and jeans, also plain and ribbed knit goods and wool. Estimates on building and equipment are being asked.

—*Massachusetts, Easthampton. Machinery, etc., is being set up in the new mill of the West Boylston Manufacturing Company. It will probably be about July or August before the plant will be ready to start production of goods. The mills at Oakdale will not be shut down until new plant is in full operation.

—*Massachusetts, Millbury. C. F. Marston is president; E. E. Howard, treasurer and Chas. C. Shepard, superintendent of the new company, not yet organized, which will start operations here February 1st, 1901, making all kinds of hammocks. Mill will be equipped with 10 machines and operated by steam. Employment will be given to about 20 people.

—North Carolina, Belmont. It is reported that Messrs. May & Lowe, of Gastonia, N. C., have purchased a site here, upon which they contemplate erecting a cotton mill.

—*North Carolina, Charleston. The new cotton mill, previously mentioned to be erected by R. M. Miller, Jr., is now an assured fact. Company has been organized with capital stock of $100,000, with privilege of increasing to $300,000. Site has been secured about two miles from the city on the main line of Southern Railway. Two ply yarns, from 40s to 60s will be spun.

—*North Carolina, Charlotte. The new plant of the Chadwick Manufacturing Co., now under construction, and capitalized at $250,000, with E. A. Smith, president and treasurer, will be equipped with 12,200 spindles and 204 looms for making sheetings. Steam will be power used.

—*North Carolina, Gastonia. Machinery is being installed in the new plant of the Loray Mills, about which full report has been previously made regarding equipment, etc.

—North Carolina, Greensboro. The Farish-Stafford-Campbell Company has been incorporated with capital stock of $1,000,000 to buy, sell and manufacture all kinds of cotton and woolen goods. Special attention will be given to the commission business. The incorporators are: W. W. Farish, G. A. Stafford, H. S. Pigott and G. S. Campbell.

—*North Carolina, Wake Forest. The new plant of the Royall Cotton Mills is

expected to be ready to start production of goods March 1st.

—*South Carolina, Union. Charter has been granted to company, in which W. H. Sartor is interested, to operate under name of the Aetna Cotton Mills.

—*South Carolina, Whitmires. Work is progressing on erection of the new mill for Glenn-Lowery Mfg. Co., which expects to have plant ready to start operations next fall. It is now proposed to equip the mill with 25,000 or 30,000 spindles, instead of 15,000.

—*Tennessee, Humboldt. Work is nearing completion on erection of the Humboldt Cotton Mills. The main building, which is 200x125 feet, is constructed so that it may be enlarged to accommodate 15,000 spindles and 400 looms. They will start operations with 3,500 and 100 respectively.

—*Tennessee, Jackson. Work is being pushed on installation of machinery in the new plant of the Jackson Fibre Co. The concern contemplated starting operations January 1st, but were unable to do so.

—*Texas, Corsicana. The capital stock of the Corsicana Cotton Factory has been increased from $100,000 to $150,000.

—*Texas, Gonzales. Work will soon be started on superstructure of the Gonzales Cotton Mills.

—*Texas, Paris. About $75,000 has been subscribed toward the capital stock of the cotton mill proposed at this place.

—*Virginia, Roanoke. The buildings for the Roanoke Cotton Mills have been completed and order placed for the 5,000 spindles which will be installed as soon as possible.

Enlargements and Improvements.

—Connecticut, Danielson. The Quinebaug Company is installing 206 new Northrop looms in the plant. If found to operate successfully, they will replace all the looms, now in the plant, with new ones of above make.

—Connecticut, Windham. The Windham Manufacturing Company contemplate erecting a weave shed in the near future.

—*Georgia, Columbus. A corrected report of the addition to the Columbus Mfg. Co.'s plant, states that they are consideing increasing the capital stock from $400,000 to $500,000 for adding 5000 spindles to the plant. The new mill of 20,000 spindles, with 640 looms, is ready to start operations.

—*Georgia, Monroe. The Walton Cotton Mill Co. is considering the project of increasing the capital stock from $75,000 to $100,000. It is thought that the plant will ultimately be increased to 10,000 spindles.

—Kentucky, Henderson. The Henderson Cotton Mills will enlarge the plant, adding about 17,500 spindles and 408 looms. Plans will soon be prepared for the enlargement.

—Massachusetts, Clinton. The Clinton Binding Company, now operating one loom, has leased larger quarters and will install three additional looms in the same, greatly increasing the capacity of the mill.

—*Massachusetts, Lancaster. The Lancaster Manufacturing Company, which has started work on installation of new spinning machinery, will take out old spinning machines on second floor to make room for new looms.

—Massachusetts, Lawrence. About 1400 twenty-eight inch looms in the upper plant of the Pacific Mills are being replaced with forty-three inch Draper looms.

—*Massachusetts, Lowell. Work is nearing completion on the two brick additions to the Boott Corporation's plant. One is four stories, 92 x 24 feet; the other, 308 x 24 feet, three stories.

—*Massachusetts, No. Abington. Work is nearing completion on new addition to the plant of A. C. Woodward. The addition to the plant, of which capacity has been nearly doubled, will be started the first of the month.

—Massachusetts, No. Adams. A finishing department has been added to the Dunbar Mills Company's plant, furnishing employment for about 20 more people.

—*New Hampshire, Newmarket. Regarding the report of new mill to be erected by the Newmarket Manufacturing Company, we have been informed that they have no intention of building another plant.

—North Carolina, Charlotte. The Highland Park Manufacturing Company has added a dye house to its plant.

—North Carolina, Charlotte. The Magnolia Mills are to add 2,000 more spindles to the plant.

—North Carolina, Gastonia. The Trenton Cotton Mills are to increase the capital stock for the purpose of doubling capacity of the plant.

—North Carolina, Mayodan. The Avalon Mills, manufacturing hosiery yarns, have recently completed addition of a dyehouse to the plant.

—*North Carolina, Smithfield. The Smithfield Cotton Mills have awarded contract for 5,000 spindles to be installed in their new mill, for manufacturing hosiery yarns.

—North Carolina, Statesville. At a recent meeting held by the stockholders of the Statesville Cotton Mills, it was decided to erect a new $50,000 mill near the present one. The new building will be equipped with 6000 spindles. More than half the additional stock has been subscribed.

—Pennsylvania, Chester. The Chester Manufacturing Company is making important improvements to its mills. The space vacated by the ticking looms which have been taken out and the Turkish towelling looms being installed in the Penn Street mill, will be equipped with new machinery.

—*Rhode Island, Phenix. The Interlaken Company, which is making exten-

sive improvements and alterations to the Harris Textile Mill, have about 160 of the looms in operation. They expect to have the plant running in full by March 1st.

—Rhode Island, Woonsocket. The National Pile Fabric Co., of which J. M. Taylor is manager, at Olneyville, has purchased the plant formerly occupied by the American Narrow Fabric Co. The company, which operates 80 looms at present, will add 100 more when located in the new quarters. Corduroy plushes for upholstery purposes are made.

—*South Carolina, Cateechee. The capital stock of the Norris Cotton Mills is to be increased from $150,000 to $200,000. Contract has been awarded for erection of enlargement to plant, in which additional machinery, previously reported, will be installed.

—South Carolina, Chester. The Eureka Cotton Mills, which have recently increased the capital stock to $150,000, are to make important improvements to the plant and contemplate erecting a new building during the year.

—South Carolina, Darlington. It is reported that the Darlington Cotton Mills, which have only recently completed large addition to plant, giving them a total of 27,000 spindles, are to install 15,000 more, making a grand total of 42,000. A new building will be erected to accommodate the same.

—*South Carolina, Rock Hill. The machinery is being installed in the Manchester Cotton Mills, increasing the number of spindles to 18,250.

Mills Starting Up.

—*Georgia, Lavonia. The Lavonia Cotton Mills have been put in operation. M. Crawford is resident of the company, which is capitalized at $65,000. Mill is equipped with 5000 spindles.

—Louisiana, Clinton. The Clinton Yarn & Cotton Mills, which have been idle for some time, have been sold by the sheriff to Isidor Mayer. Arrangements will be made to put the plant in full operation.

Woolen.

New Mills.

—Illinois, Chicago. A large brick building 70x100 feet, is to be erected on Wabash Avenue for Emil Elger, for a straw and felt factory.

—Maryland, Westminster. The Powhatan Woolen Company of Maryland has been incorporated with capital stock of $150,000 for manufacturing woolen kerseys, and cotton and woolen cloth. They have secured the site formerly occupied by the Powhatan Mills, manufacturers of hosiery, but which were abandoned after fire had made destruction to part of plant. The building now standing will be equipped with machinery and it is the intention of the company to erect a new mill and make other improvements. Geo. W. Albaugh will be treasurer and N. W. Steele, general manager of the mills.

—Massachusetts, Collinsville. Work has been contemplated on the erection of the new five-story building for the American Woolen Co. They contemplate using the first floor for scouring and drying purpose, the second as a card room and the upper floors as storage rooms for wool and raw material.

—*Massachusetts, Quinapoxet. Messrs. Gleason & Welch, previously reported as having leased the shoddy plant at this place, owned by M. V. B. Jefferson, expect to start operations on the 21st inst. They will make shoddy for Fienbergh Bros. and Hamburger Bros. of Boston.

—*New Jersey, Gloucester City. Operations will be started February 1st, in the Fries-Harley Company's new carpet and rug mill. Machinery is being installed.

—Pennsylvania, Chester. The machinery is being removed from the property formerly known as the Law & Deveney Mills, by a new company recently organized, which has leased the plant for manufacturing worsted yarns. James Emmett, at the head of the new concern, has ordered new machinery from abroad. The mill will be put in operation as soon as possible.

—Pennsylvania, Mt. Carmel. Harry John of Bloomsburg, has established a weaving plant here.

—*Rhode Island, Oakland. Work has been started on remodelling the dye house of the Mapleville Woolen Mills, recently secured by Messrs. Fletcher and Lloyd, who will manufacture worsteds. About 30 new looms will also be installed. They expect to be ready to begin production of goods about March 1st.

—Rhode Island, Providence. The Columbia Narrow Fabric Company has been incorporated with capital stock of $100,000, to manufacture, sell and deal in woolen and silk fabrics, etc., Geo. H. Clarke, George P. Clarke, of Richmond and Samuel Ward, Providence, are interested.

Enlargements and Improvements.

—California, Santa Rosa. Dr. J. R. Gregory and William Stahl have become associated with W. B. Humbert, in the Santa Rosa Woolen Mills. Some improvements are to be made in the machinery.

—Connecticut, Rockville. The American Mill Co. has added three Davis & Furber mules and two sets of cards to their mill.

—Kentucky, Franklin. The Franklin Woolen Mills Company has been incorporated. They are now completing erection of large storage building and other additions to the plant, at an estimated cost of $12,500.

—Massachusetts, Agawam. An addition, one story, 120 x 36 feet, is to be built to the Agawam Company's plant.

—*Massachusetts, Great Barrington. It is now reported that Hugh Sheridan has re-leased the Endrick Woolen Mills, and after important changes and improvements have been made to the mill and equipment, will be put in operation, under name of the Sheridan Woolen Mills. Mr. Sheridan will be superintendent of the plant, with his son as assistant superin-

tendent and designer. They contemplate having the plant in operation about the middle of January.

—New Hampshire, Enfield. The American Woolen Company has purchased the Shaker grist mill property, and will convert it into a plant for carbonizing stock to be used in the mills of the company. Extensive improvements will be made to the building.

—New York, West Cornwall. The Firth Carpet Company will install ten more looms in the plant. They will also erect a number of new houses for the operatives.

—Pennsylvania, Gladwyne. An additional set of 60 inch cards is being installed in Booth & Bro.'s mill.

—Pennsylvania, Philadelphia. John Bromley & Sons have let contract for erection of a new bleach house, one story, 62x123 feet, at northeast corner of Lehigh Avenue and Fillemore Street. New machinery will be installed.

—Tennessee, Sweetwater. The Sweetwater Woolen Mills contemplate adding a cotton yarn and warp factory, of about 4000 spindles, to the plant.

—West Virginia, Barnesville. The Barnesville Manufacturing Co. contemplates doubling the present capacity of the mills.

Mills Starting Up.

—Illinois, Fairfield. The Fairfield Woolen Mills, of which J. R. Creighton, is one of the assignees, have been purchased by T. R. Jones. It is stated that the plant will be put in operation at once to fullest capacity.

—Maine, Dexter. The Penobscot Woolen Company's mill has been leased by Walter Scott, of Fay & Scott, and P. S. Plouff, formerly boss weaver in the Amos Abbott Company's mill, and later superintendent for the Penobscot Woolen Co., for one year, starting Jan. 15th.

—*Massachusetts, Pittsfield. Operations have been resumed with a full force in the plant of the Pittsfield Manufacturing Company.

—*Massachusetts, Pittsfield. Work has beeen resumed in the plant of the Pontoosuc Woolen Company. It is thought that they will be able to continue operations the rest of the winter.

—*Massachusetts, South Franklin. Some of the machinery in the new plant, established here last fall by Daniel Pendergast, is in operation.

—*Massachusetts, Warren. The Bradford Yarn Mills, which have been shut down, are now running.

—*Rhode Island, Wickford. Operations have been resumed in the Wickford Worsted and Oak Hill Mills, of which William Gregory is proprietor.

Mills Shutting Down.

—New York, East Salem. The Eagleville Woolen Mills, C. P. Hatch, proprietor, have been shut down until about March 1st for purpose of taking an inventory and making general repairs to the plant.

Knit.

New Mills.

—Canada, Ontario, Dunnville. The Imperial Knitting Co., L..., has been recently incorporated with capital stock of $40,000, by James Rolston and W. F. Haskins. They will manufacture hose and half hose. Plant, which will be equipped with dye house and operated by steam, will be put in operation about March 1st, 1901. This refers to new plant, which we previously reported as a new carpet factory.

—*Georgia, Fort Valley. Work is rapidly nearing completion on erection of the new knitting mill at this place. J. M. Jones, H. A. Mathews and L. L. Brown are interested in the concern, which will manufacture ladies' underwear.

—*Georgia, Tallapoosa. We have been informed by Justin C. Jackson, of Wilsonville, Ala., that with other associates, he is negotiating the knitting business for plant making cheap hosiery, of about 50 machines, capacity 100 dozen pairs per day. Mill is to be erected at this place.

—Louisana, New Iberia. The New Iberia Cotton Milling Company has decided to erect a knitting mill in such a way that the cotton mill originally designed to cost $25,000, can be added. W. J. Magee of New Orleans, will be superintendent. They expect to begin operations about April 1st.

—Michigan, Clinton. The Clinton Knitting Company has been incorporated with capital stock of $25,000, with Edwin R. Smith, president; W. A. Kimball, treasurer and H. H. Humphrey, superintendent. They will manufacture wool and worsted gloves, mittens and hosiery. Dye house and finishing will be attached to the mill, which is now in operation.

—Michigan, Grand Rapids. The Globe Knitting Works, manufacturing jersey ribbed underwear, will erect a new four story mill. Plans have not been fully decided upon.

—New York, Baldwinsville. Alexander Allen, of Philadelphia, has leased space in the mill building formerly operated by J. C. & J. C. Baldwin, and will start manufacture of ladies' union suits. Plant at Philadelphia will be removed here and put in operation as soon as possible.

—*New York, Utica. The new company recently formed here by D. W. Northrup and others, will be known as the D. W. Northrup Co. The mill, which is operated by steam, manufacturing knit caps and Tam O' Shanters, is equipped with 3 sets cards and 19 knitting machines.

—*North Carolina, Valdese. Work has been started on erection of the new hosiery mill here. It is expected that operations will be started in about three months.

—*Pennsylvania, Allentown. We have been informed by the Clinton Knitting Mills, of which C. D. Strauss is president and treasurer, and J. F. Thompson superintendent, that the plant, which is at present equipped with 10 machines, will be increased to 20, and not 63 as previously reported. Ladies' cotton ribbed underwear is made.

—*Pennsylvania, Avon. Light & Bomberger will start operations about April 1st, 1901, in their new plant, now under construction, for making 144 needle men's hose. Company is capitalized at $5500. Will have an equipment of 18 machines, and furnish employment for about 22 people.

—*Pennsylvania, Philadelphia. We have been informed by Thos. E. Brown & Son, that they started operations January 1st, in plant formerly occupied by Brown & Hunt, which will be known as the Radmoor Mill. Ladies, mens and misses' fashioned and seamless cotton hosiery is manufactured. They operate 200 machines; using steam power.

—Pennsylvania, Shamokin. The Shamokin Underwear Mills, F. E. Ammerman, proprietor, have been established here with capital stock of $15,000. Ladies' ribbed vests and other cotton knit goods will be made.

—Pennsylvania, Steelton. The Dauphin Hosiery Company has been incorporated with capital stock of $6000.

—South Carolina, Dillon. The Pee Dee Knitting Mills have been incorporated with capital stock of $10,000 for manufacturing knit goods.

—*South Carolina, Jonesville. The new building to be erected by the Jonesville Knitting Mills, manufacturing 184 needle hose and half hose, will be put in operation about August, 1901. They will add 75 new machines, giving them a total, when completed, of 115.

—*Virginia, Williamsburg. The Williamsburg Knitting Mills Co., whose plant is now in operation on a small scale, expect to have it running to its full capacity by March 1st, with 150 dozen per day.

—Wisconsin, Menasha. A knitting mill, for making sweaters, mittens and other lines, will be put in operation here soon by Rev. P. Jersild, Neenah, Wisconsin. H. Jersild will be manager of the plant.

Enlargements and Improvements.

—Connecticut, Winsted. The New England Knitting Co. has recently installed two sets of cards and two sets of 300 mule spindles in the plant .

—*Indiana, South Bend. The A. C. Staley Mfg. Co. has completed the erection of four-story brick addition to plant, reported in a previous issue to be built.

—New Jersey, Woodbine. The Quaker City Knitting Company, 4th and Commerce Sts., Philadelphia, are to remove their plant to this place, where a new mill, 90 by 50 feet, 3 stories high, is under construction. They will operate 75 knitting machines in the new plant. J. M. Kahn, the general manager, will open an office in Philadelphia, for selling the goods.

—New York, Cohoes. The Root Manufacturing Company has installed 3 new garnett machines in the plant.

—New York, Rochester. Louis Gruber, who has been operating a small hosiery mill here since last August, is considering the project of forming a stock company to increase size of plant and manufactured articles.

—*North Carolina, Kinston. The Orion Knitting Mills have recently completed addition of dyehouse to the plant.

—*Pennsylvania, Robesonia. Ten new machines will be installed in the Robesonia Knitting Mills, now operated by Leinbach & High, making men's half hose. This will give the mill a total of 40 machines when done.

—Utah, Logan. Additional machinery is to be installed in the Cache Knitting Works.

—*Vermont, Brattleboro. We have been informed by Chas. Miner that an addition will be built to the hosiery mill and that 10 new knitting machines, 2 looms and 2 or 3 sets cards will be installed.

Mills Starting Up.

—*Florida, Jacksonville. The Jacksonville Knitting Company is now starting up the knitting plant at this place, concerning which we have made previous mention.

—*New Jersey, Salem. The Priscilla Knitting Mills started production of goods in their hosiery and underwear mill, January 1st., 1901.

—*New York, Arcade. About 40 people have started work in the Fashion Knitting Mill Co.'s plant.

—New York, Mohawk. Operations have been resumed in the Mohawk Valley Knitting Mills after a short shut down.

—New York, Valatie. Operations have been resumed after a shut down of two weeks in the Valatie Knitting Co.'s mill.

—New York, Waterford. Operations have been resumed in full in the Waterford Knitting Company's mill.

—South Carolina, Newberry. The Newberry Knitting Mill is now in operation. This concern manufactures men's hose.

—*Rhode Island, Woonsocket. Operations have been resumed in The Glenark Knitting Company's mill, after a shut down of three weeks.

—*Vermont, Bennington. Operations have been resumed in the knitting mills of H. E. Bradford & Co., Valentine Knitting Co. and Geo. Rockwood & Co., after shut down of several weeks.

Mills Shutting Down.

—New York, Cohoes. The Atlantic Knitting Company's plant has been shut down pending the settlement of the estate of the late Geo. Campbell, of Campbell & Clute, who was a large stockholder in the concern.

—New York, Kinderhook. The Kinderhook Knitting Company's mill has been shut down for a few weeks for purpose of taking an inventory. They will also make alterations to the building during shut down.

—Utah, Salt Lake City. Operations will soon be suspended in the Cutler Bros. Company's hosiery mill until about

March, when they contemplate resuming in full.

Silk.

New Mills.

—New Jersey, Hoboken. A branch plant has been started here by the Amsterdam Silk Mills, of Amsterdam, N. Y. Mill is equipped with 20 Lamb and 4 Scott & Williams machines for making cut mittens. When in full operation, they expect to employ about 75 people.

—*Pennsylvania, Peckville. The Loveland Throwing Company, which has been incorporated to erect and operate a silk throwing mill at this place, contemplates having the plant ready to start operations by April. Valentine Bliss, J. D. Peck and C. H. Loveland are among the directors. Work will be started at once on erection of building, company having secured a valuable site.

Enlargements and Improvements.

—New York, Kenwood. It is reported that the Oneida Community, with mills at Sherill and Kenwood, will remove the plant at Sherill to this place, where a new building will be erected for same. They contemplate erecting a large storehouse at Sherill.

—*Pennsylvania, So. Bethlehem. New machinery is to be installed in George W. Grube's silk mill.

Mills Starting Up.

—Massachusetts, Pittsfield. Work has been resumed in a portion of the A. H. Rice & Co.'s mill, after a shut down of several days.

—*New York, Unionville. It is reported that Toner & Prescott's Mill will soon be put in operation.

Mills Shutting Down.

—Pennsylvania, Butler. It is reported that on account of the unsatisfactory condition of the silk market, the Butler Silk Mill has been shut down.

Miscellaneous.

New Mills.

—Connecticut, Danbury. It is reported that M. D. Miller, of St. Paul Park, Minn., has made proposition to this town, regarding establishment of a plant for manufacturing linen goods. It is proposed to have capital stock of $300,000.

—Massachusetts, Newton Upper Falls. A new mill is to be erected on Oak Street for the Cherokee Turkey Red Dye Co. Contract for building has been let to Chas. F. Jones.

—*Rhode Island, Woonsocket. The Hart Textile Co., of which John J. Hart is general manager, and which was recently incorporated with capital stock of $200,000, will be ready to start operations about March 1st, 1901. They will cut, print, dye and finish corduroys, velvets, plushes and pile fabrics. About 150 people will be employed. An addition will be built to the Ballou Mill, which they purchased.

Enlargements and Improvements.

—Massachusetts, Indian Orchard. The American Flax Company of Meredith, N. H., has rented part of Mill No. 1 of the Indian Orchard Company's plant, and will remove the industry here. This concern, of which J. H. Clune is treasurer, manufactures linen yarns and towels, and owing to increasing business, outgrew present quarters.

—Massachusetts, Lawrence. An additional two-story building, 100 by 60 feet, is under construction for the Lawrence Dye Works Co. A 100 h. p. boiler and 150 h. p. engine are also being installed.

Mills Starting Up.

—*Massachusetts, Webster. Operations have been resumed in the Stevens Linen Works which were shut down December 22nd.

—*Pennsylvania, Yardley. Operations have beeen started in the plant of the Cold Spring Bleaching & Finishing Works.

—*Rhode Island, Providence. A formal start was made in the new bleachery established at Phillipsdale by Frank A. Sayles. It is stated that in a short time the plant will be thoroughly equipped and running to its full capacity.

Fires.

—Connecticut, South Coventry. Fire, which started in the picker room, totally destroyed the woolen mill operated and owned by John M. Wood, on the 14th inst.

—Massachusetts, Chicopee. Fire which started in the dye room of Number 2 mill of Olmstead & Tuttle Co.'s plant, caused damage to the amount of $3,000.

—Massachusetts, Clinton. The storehouse of the Clinton Worsted Co. has been destroyed by fire. Loss on building and contents is estimated over $2000; covered by insurance. They contemplate rebuilding in the spring.

—Massachusetts, Fall River. The Troy Cotton & Woolen Mfg. Co.'s plant was badly damaged by fire. Loss is estimated at about $20,000; covered by insurance.

—Massachusetts, Millbury. The Aldrich Shoddy Mill was damaged by fire recently, to the extent of about $3,000.

—New York, Amsterdam. The plant of the Atlas Knitting Company, which has been running nights for some time, was damaged by fire. Loss exceeded $2,000.

—New York, Valatie. The Valatie Knitting Company's plant was damaged by fire recently, which started in the card room. Loss is estimated at about $5,000 and is covered by insurance.

—North Carolina, Randleman. A section of the Randleman Manufacturing Company's plant was damaged by fire recently.

—Ontario, Lambton. The Lambton Mills were badly damaged by fire. Loss is estimated at about $75,000.

Pennsylvania, Downington. The large plant of the Downington Knitting Company was totally destroyed by fire on the 4th. inst. Loss, which is estimated at about $11,000, is partly covered by insurance.

—Pennsylvania, Philadelphia. The large shoddy plant, known as the Wakefield Mills, Wm. Peel & Co., proprietors, Germantown, was totally destroyed by fire on the 10th inst.

—Pennsylvania, Philadelphia. Lull Brothers' silk mill, 1239 Brown Street, making spool and sewing silk, was damaged by fire recently. Loss, which is estimated at about $2000, is covered with insurance. This is one of the concerns which opposes the Silk Trust.

—Pennsylvania, Wilkesbarre. The Wyoming Valley Lace Mill was damaged by fire recently. Loss is estimated at about $8000, covered by insurance.

—Rhode Island, Pawtucket. The building occupied by the Blackstone Stocking Company and the Lebanon Mill Company, was damaged by fire, causing a loss to manufacturers of about $3000.

Failures and Suspensions.

—Massachusetts, Canton. The Lexington Print Works have made an assignment. The company, which has capital stock of $110,000, has assets estimated at about $175,000, with liabilities amounting to $65,774.

—Massachusetts, So. Hadley Falls. William Hill of So. Hadley Falls and C. Fayette Smith, Holyoke, have been appointed receivers of the Glasgow Manufacturing Company. Liabilities are estimated at about $100,000.

—North Carolina, Winston-Salem. The Twin City Knitting Mills, H. C. Lemly, treasurer, have gone into the hands of a receiver, viz: Col. F. H. Fries. The assets are estimated at about $12,000; exact liabilities not known. The capital stock is to be increased, the mill continuing operations.

—Pennsylvania, Philadelphia. The firm of McCallum & McCallum, Wayne Junction, Germantown, manufacturers of carpets, have made an assignment for benefit of the creditors, to Andrew R. Matthews. No estimate has yet been made of the liabilities and assets.

—Rhode Island, Bristol. William H. Sweetland and J. Jerome Hahn, of Providence, have been appointed receivers of the American Textile Manufacturing Co. As per statement made, the company has liabilities amounting to about $3000, and that there is a mortgage of $1000 on the property.

Facts and Gossip.

—Alabama, Anniston. The bag factory, operated by Pratt & Yates, has been purchased by Archibald Henderson, who contemplates enlarging it. Mill has been idle for some months.

—Colorado, Denver. The Underhill Manufacturing Company has been incorporated with capital stock of $100,000 by Charles Bayly, W. G. Sutherland and Wm. Bayly. They propose carrying on a wool and cotton manufacturing business.

—Connecticut, Hanover. Angus Parks, who has been operating the Allen Woolen Mill, on a lease for the past two years, has purchased the plant for $25,000.

—Connecticut, Jewett City. The W. A. Slater Mills Corporation, operating a plant here, and formerly one at Slatersville, R. I., has been dissolved. The plant is now run as the W. A. Slater Mills.

—*Connecticut, South Coventry. We have been informed by J. M. Wood that he has so far made no plans regarding rebuilding of mill, recently destroyed by fire.

—*Connecticut, Thompsonville. At a recent meeting of the stockholders of the Hartford Carpet Co., it was decided to accept an offer from Kidder, Peabody & Co., of par in cash for company's stock, or 67 per cent. in preferred and the same amount in common stock of a company that is to be formed with combination of the E. S. Higgins Co., New York. The new corporation will be capitalized at $5,000,000; $2,000,000 in preferred and $3,000,000 in common.

—Indiana, Lafayette. The Lafayette Hosiery & Manufacturing Company has discontinued the manufacture of knit goods and now make only shirts and overalls of woven material.

—Maine, Madison. A night force has been put on at the Indian Spring Woolen Co.'s mill, for about three months. The Madison Woolen Co. has also started with a night schedule.

—*Maine, Portland. We have been advised that the new company reported incorporated at this place, as Booth & Co., Ltd., is an English concern which has taken out a charter in the expectation of starting business as either selling agents or manufacturers of such as mentioned in previous report.

—Maine, Rumford Falls. The Rumford Falls Woolen Mill is now in operation under management of John Crowe, as agent and superintendent. Paper and pulp makers' felt and jacketing are made. This mill is equipped with one set cards and nine looms.

—Maryland, Baltimore. The Elite Dry-Cleaning and Dyeing Company has been incorporated with capital stock of $10,000. John W. Lowe, George A. Klinefelter, William N. Slack, Edward B. Young and James W. Chapman, Jr., are the incorporators.

—Massachusetts, Auburn. C. M. Thayer, counsel of the Auburn Mills Company, Auburn, Mass., has filed a petition for dissolution of the concern stating that the company has ceased to do business and has no debts nor assets. Geo. F. Hutchins, Charles H. Hutchins and John M. Russell are mentioned stockholders.

—Massachusetts, Dedham. About two-thirds of the looms in the Merchants

Woolen Co.'s plant, of which 20 are on satinets are in operation; and 23 sets of cards, of the full 29, are in operation.

—Massachusetts, Fairhaven. It is rumored that a project is on foot for erecting a cotton mill here.

—Massachusetts, Franklin. The controlling interest of the Franklin Knitting Co., which has been held previously by A. D. Thayer, has been purchased by Messrs. Dennison and Esterbrook of Boston, who will continue operating the plant as heretofore, as Dennison, Esterbrook & Co. The new company contemplates doubling the working capacity, shortly. The part of the plant for manufacturing yarns, will be retained by Messrs. A. & H. Thayer.

—Massachusetts, New Bedford. It is reported that Antone L. Sylvia, John Duff, George Brightman and John Sullivan, superintendent of the Union Mills, Fall River, are interested in the erection of another cotton mill at this place for making cloth. Subscriptions of stock are being solicited.

—Massachusetts, Saugus. The Saugus Woolen Manufacturing Company has been organized with a capital stock of $70,000.

—*Massachusetts, So. Hadley Falls. The Clasgow Mills, for which receivers have been appointed, will continue operations until after the stock on hand has been run out. It is not yet known just what will be done after that. Wm. Hill is one of the receivers.

—*Minnesota, Albert Lea. We now learn that the projected plant here is for manufacture of flax fibre for linen mills and not a linen mill as reported. Mrs. C. N. Olberg is actively interested in the enterprise.

—Minnesota, Minneapolis. A. M. Walker, of Walker's Carpet Cleaning Works, has absorbed the plant of the Gilmore Knitting Co., and is manufacturing cotton and wool hosiery and sweaters. Mill has 7 knitting machines. Sells good direct.

—Missouri, St. Louis. The Dudley Street Carpet Manufacturing Company has been incorporated with capital stock of $10,000 by A. C. Carper, A. W. Dudley and C. E. Carper.

—New Jersey, Paterson. The Clowes, Sothern Co. has been incorporated with capital stock of $50,000, by William Clowes, John W. Sothern and Adolf M. Ackerman. This concern will operate mill formerly run by Clowes, Sothern & Moss.

—*New York, Delhi. The Gallant Brcs. Silk Mill property will be sold at a referee sale February 26th, for purpose of clearing the title from all claims in the interest of the bondholders. It is reported that there are parties who wish to purchase the plant and operate it as private property.

—New York, Dryden. L. E. Patterson of Connecticut has purchased an interest in the Dryden Woolen Mill. It is proposed to manufacture felts and all kinds of woolen goods in addition to that of horse blankets.

—New York, Elmira. At a recent meeting of the directors of the Superior Knitting Company, R. B. Clark was elected president; F. E. Haight, vice-president; and George W. Clark, secretary and treasurer. Authority has been given the treasurer to investigate and correspond with parties who had offered inducements for removal of the plant, and also local parties in regard to what inducements would be made to keep plant at Hoosick Falls.

—New York, Greenwich. The Van Zile Knitting Company has been incorporated by J. V. Palmer (Greenwich) and M. C. Rowe and J. S. Cronin (Troy), with capital stock of $60,000. They will operate plant formerly run by Jesse V. Palmer.

—New York, Homer. Arrangements have been made by H. I. and M. A. Whiting for purchasing an interest in the Homer Woolen Mills, Newton Bros., proprietors.

—New York, New York. Martin & Fischer, commission merchants domestic worsteds and woolens, have removed from 92 Grand Street, to 75 & 77 Worth Street.

—*New York, New York. The receiver for W. L. Strong & Co., Edward A. Treat, has made a statement to the effect that the accounts will be settled for 40 cents on the dollar. It is thought that all the creditors will accept.

—New York, Skaneateles Falls. The Ayreshire Woolen Mills, Gavin Morton, proprietor, which are shut down one week, for purpose of taking an inventory, will be restarted by Morton & Co., comprising Gavin Morton and T. S. Boothroyd. Mr. Morton will retire from active business, and Mr. Boothroyd will have full management of the plant.

—*New York, Stockport. The Rossman Knitting Company's mill, which has been shut down since latter part of December, expects to be soon running in full.

—*New York, Unionville. Toner & Prescott, whose bankruptcy was previously mentioned, with liabilities of $66,123, have been granted a discharge.

—North Carolina, Ayden. A project, in which W. F. Mosely is interested, is now on foot for organizing a company to build and operate a knitting mill. Estimates on cost of machinery, etc., are being received.

—North Carolina Belmont. The Stowesville Cotton Mill, erected in 1851, and which has not been running lately, collapsed recently.

—North Carolina, Charlotte. The stockholders of the Louise Cotton Mills elected J. P. Wilson president, in place of E. A. Smith, who resigned to take charge of the Chadwick Mills, at a meeting recently held. Capt. W. S. Mallory was re-elected secretary and treasurer.

—Pennsylvania, Centreport. The Centreport Knitting Company, manufacturing ribbed underwear, has been dissolved. The mill is now operated by Jno. E. Pautsch, as sole proprietor.

—*North Carolina, Ephesus. At the annual meeting held recently by the stockholders of the Cooleemee Cotton Mills, of Cooleemee Falls, W. A. Erwin was elected president and Jas. H. Webb, of the Edenton Cotton Mills, N. C., secretary and treasurer.

—*Ohio, Tiffin. Work has been resumed in several departments of the Tiffin Woolen Mills, reported damaged by fire two months ago. The entire plant, employing about 200 people, will soon be running.

—Pennsylvania, Carlisle. It is reported that the Carlisle Silk Mill will soon be shut down, as those interested are also active in the new mill of the Diamond Silk Co., at York.

—Pennsylvania, Downington. The Downington Knitting Company, whose plant was recently destroyed by fire, has not yet decided about restarting the business. The plant was only leased and the owner of the building destroyed has made no definite decision about rebuilding.

—Pennsylvania, Dunmore. The Cambria Silk Throwing Mill, formerly owned and operated by Messrs. Powell and Jenkins, is now controlled by Valentine Bliss, of Scranton, Penn.

—Pennsylvania, Glen Riddle. Operations have been resumed in the plant of Samuel Riddle's Sons, (recently reported as having failed) in order to work up the large amount of cotton and wool on hand, after which the plant will be closed until the company's affairs are adjusted. John Vance, Jr., is temporary receiver of the plant.

—*Pennsylvania, Philadelphia. William Peel & Co.'s shoddy mill, recently destroyed by fire, will be rebuilt.

—Pennsylvania, Philadelphia. Samuel Beswick has purchased the interest of Edward Kay, deceased, in the firm of Beswick & Kay, manufacturers of yarn, and will continue the business in his own name.

—Pennsylvania, Plymouth. Harry F. Kelly of the Shawnee Knitting Mills has sold his interest in the plant to Templeton Bros., who will carry on the business.

—*Pennsylvania, Sunbury. Slear Brothers, who have purchased P. W. B. Eckert's knitting mill, will have their product on the market by February 1st.

—*Rhode Island, Bristol. The American Textile Manufacturing Company's property, including mill and machinery, was sold at receiver's sale by C. H. Straight, to Arthur O' Leary of Providence, for $1515. Mr. O'Leary contemplates operating the plant for carbonizing of wool materials.

—Rhode Island, Woonsocket. It is reported that George Mason, of the American Narrow Fabric Co., whose plant has been purchased by the National Pile Fabric Co., of Olneyville, will take the braiding machines now in the plant and start up a new plant. Franklin is under consideration as a location, but it is thought that if a suitable building can be secured, plant will be started here.

—*South Carolina, Anderson. We have been informed by Ellison A. Smyth of the Pelzer Manufacturing Co., that there have been several propositions made toward the erection of another cotton mill at this place, but as yet, none have been accepted and the matter is still held up.

—South Carolina, Clemson College. A three-story addition, 72 by 75 feet, is being completed for the textile department of Clemson College and will soon be put in operation.

—*South Carolina, Rock Hill. The mill property of the Crescent Cotton Mills was purchased by W. J. Roddey, agent, for $33,500 and certain machinery on which the Saco & Pettee Machine Shops had a special lien, was taken by Capt. A. H. White, for $9100.

—*Texas, Paris. The project of a cotton mill is again under consideration at this place. A committee, comprising H. H. Kirkpatrick, J. T. Conway, J. A. Varner, W. F. Dulaney and F. R. Fenet, has been making investigations regarding cost mill building and equipment. They propose securing $100,000 capital stock for the enterprise.

—*Vermont, Bennington. Work has been completed on removing the machinery from the plant formerly operated by the Campbell Knitting Co., to Elmira, N. Y.

—Virginia, Newport News. The Business Men's Ass'n, represented by Reynolds Bros., agents, are anxious to establish more industries in this place, and believe that necessary capital can be raised to secure any industry that bids fair to pay. They are especially interested in a rope and twine factory and overall factory, and are looking for an intelligent man who has necessary technical experience to manage and promote such enterprises.

—South Carolina, Sumter. It is reported that D. M. Blanding is interested in establishing a knitting mill here and is receiving estimates on machinery, etc.

—Tennessee, Memphis. The Memphis Lint Co. is to enlarge and improve its medicated wadding factory and is in the market for a carding machine.

PERSONAL RECORD.

Cotton.

—John Barnwell, Valley Falls, R. I., is now at Central Falls, R. I., overseer of spinning for the Stafford Mfg. Co.

—B. F. Bragdon, formerly of Berwick, Me., is now night superintendent at the Nourse Cotton Mill, of Woonsocket, R. I.

—J. E. Bruce, who recently resigned as boss spinner at the Clifton Cotton Mills, Clifton, S. C., has taken charge of the spinning department of the Union Cotton Mills, Union, S. C.

—A. D. Burt, formerly weaver at the Columbia Cotton Mills, Columbia, Tenn., is now boss weaver for the Phoenix Cotton Mills, Nashville, Tenn.

—J. K. Cheney, formerly with the City Mills Corporation, New Bedford, Mass., has resigned to accept the position of overser of ring and mule spinning and warping at the Kearney Cotton Mill, Kearney, Neb.

—G. S. Carney, of Lowell, Mass., has been engaged as superintendent of the Janesville Cotton Mills, about to begin operations at Janesville, Wis.

—Thomas Cavanaugh, formerly of River Point, R. I., is now in charge of the carding department of the Harris Mill, of the Interlaken Co., Harrisville, R. I.

—Oliver D. Drew has resigned as superintendent of the Clinton Mfg. Co., Woonsocket, R. I., to take charge of the Peabody Mills, Newburyport, Mass.

—F. L. Emery, who was superintendent of the Lynchburg Cotton Mill, Lynchburg, Va., has accepted a position as general manager of the five mills of the Odell Manufacturing Co., of Concord, N. C., the Buffalo Thread Mills, of the same place, the J. M. Odell Mfg. Co. mills at Bynum, N. C., the Southern Cotton Mill, of Bessemer City, N. C. C. P. Emery, who was assistant superintendent of the Lynchburg Mill, will be superintendent of the Buffalo Mills at Concord.

—C. H. Gruesell has succeeded H. C. Worcester as superintendent of the Ballou Mills at Ballouville, Conn.

—David Grove, superintendent of the Dyerville Mfg. Co., Providence, R. I., has been succeeded by G. A. Robbins.

—James H. Grant, who has been in charge of the spinning room at the No. 3 mill at West Warren, Mass., has gone to Newburyport, to take a similar position.

—J. W. Hawks, formerly with the Edna Cotton Mills of Reidsville, N. C., has recently accepted overseership of the spinning department at the Cooleemee Mills, Cooleemee, N. C.

—R. H. Hanson, recently at the Cohankus Mills, Paducah, Ky., is at present engaged at the Hampton Cotton Mills, Hampton, Ga.

—C. A. Hodge, formerly with the McColl Mfg. Co., McColl, S. C., has been appointed superintendent of the Marie Cotton Mills, at the same place.

—Edward Handy, late at the Manchaug Mill, Manchaug, R. I., is now boss spinner for the Interlaken Co., Harrisville, R. I.

—William Harworth is now filling the position of boss weaver in the Manville Co.'s mill, Manville, R. I. He was formerly with the Hargraves Mills, Fall River, Mass.

—T. J. Honan has been made overseer of weaving at the Louise Mills, Charlotte, N. C. Mr. Honan was formerly of the Eclipse Mills, North Adams, Mass.

—W. O. Henderson, of Toccoa, Ga., has accepted the position of supervisor of mahinery in the new Knoxville Cotton Mills, Knoxville, Tenn. Mr. Henderson has worked in Atlanta and Gainesville mills, and for the past four years had been connected with the Toccoa Cotton Mills.

—Gus Krause, overseer of mule and ring spinning at the Kearney Cotton Mills, Kearney, Neb., has resigned to accept the position of overseer of spooling, slashing, warping and web drawing at the Henderson Cotton Mills, Henderson, Ky.

—Curt W. Miller, who was with the print works at Passaic, N. J., for some fifteen years, has removed to Pawtucket, R. I., assuming charge of the office there of the U. S. Finishing Co.

—Allen McInnis is overseer of the beaming department of the Southern Cotton Mills, Bessemer City, N. C.

—James McNabb, late with the Hamilton Woolen Co., Amesbury, is now boss weaver at the Boott Mill, Lowell, Mass.

—George Maisland, overseer of mule spinning at the Ashton Cotton Mills, Ashton, R. I., for many years, has resigned and gone to New Bedford.

—C. W. Moore, formerly at the Kesler Mill of Salisbury, N. C., is now overseer of spinning at the East Durham, N. C., mill.

—Charles Meddery, formerly of Montville, Conn., is now in the employ of the Eagle Cotton Mill, Eagleville, Conn., as boss weaver.

—Robert Montgomery, formerly of the Rock Mills, Rockville, Conn., is now boss

finisher at the James Regan Mfg. Co.'s No. 4 mill, at that place.

—John Nichols, of Natick, R. I., has been engaged by the Hope Co., Hope, R. I., as boss spinner.

—O. S. Owens has resigned as superintendent of the Rhodes Warp Co., Millbury, Mass.

—S. C. Phillips has resigned as overseer of the spinning department in the Slater Mill, Jewett City, Conn., and M. J. Burgess, overseer of the spooling and warping room, has also resigned, and returned to Fall River, Mass.

—H. C. Phillips, formerly superintendent of the Atlantic Mills, Lawrence, Mass., has entered the employ of the Merrimack Mills, Lowell, as assistant superintendent.

—G. A. Robbins has recently become superintendent for the Dyerville Mfg. Co., Providence, R. I., succeeding David Grove.

—D. A. Russell, who has been superintendent for several years of the Windsor Print Works, North Adams, Mass., will act as manager for the present in place of the late Col. John Bracewell.

—Samuel Rowe, foreman of the bleaching department at the Arnold Print Works, North Adams, Mass., has resigned, and will go to Chester, Pa.

—F. A. Rowe has resigned the superintendency of the Great Falls Bleachery at Somersworth, N. H., and taken a similar position in North Adams. E. R. Lawson has been appointed superintendent in his place. The latter has been in charge of the dyeing department for three years.

—T. H. Sweeney, formerly at the Attawaugan Company's mill at Killingly, Conn., has succeeded A. A. Chase as overseer of the cloth room for the Warren Mfg. Co., Warren, R. I.

—John Smith has been promoted to the position of boss weaver at the Wauregan Mills, Wauregan, Conn.

—T. C. Smith, overseer of frame spinning for the Stafford Mfg. Co., Central Falls, R. I., has resigned.

—Charles Sweetman, superintendent of the Triton Cotton Mills of New Castle, Del., has resigned to accept a position as manager of a cotton mill at Norfolk, Va.

—Alfred Sagar, of Methuen, has recently been made superintendent of the Arlington Cotton Mills, Lawrence, Mass., to succeed George W. Towne, resigned. Mr. Sagar has been with the mills since 1885, holding the position of cotton stapler. He is well acquainted with the various departments, and there is every indication that he will be successful in his new position.

—David Simms, overseer of weaving in the Hargraves Mill No. 2, Fall River, Mass., recently resigned.

—G. A. Tobey is overseer of carding for the Dyerville Mfg. Co., Providence, R. I., having taken Lewis Sanborn's place.

—Frank Towle, of Fitchburg, Mass., has recently been appointed superintendent of the Tremont & Suffolk Mills, Lowell, Mass.

—Charles R. Thompson, superintendent of the Gloucester Gingham Mills Co., Gloucester City, N. J., has been transfered to a Frankford mill, and Harris C. Powell, assistant superintendent, has been appointed to succeed him. It is reported that the company will discontinue weaving at this mill and devote the entire plant to spinning yarns.

—A. J. Warner, engineer at the Proximity Manufacturing Co., Greensboro, N. C., has resigned.

—W. H. Willis, overseer and designer of the Delaware Cotton Mills, Wilmington, Del., has been appointed overseer of the weave room, web-drawing and slashing at the Kearney (Neb.) Cotton Mills.

—Arthur L. Ware has resigned the superintendency of the Laurel Mills Manufacturing Co., Roswell, Ga., to accept a position with the Cotton States Belting & Supply Co., of Atlanta, Ga.

—Assistant Superintendent Wilmarth at the mills of the Berkshire Cotton Manufacturing Company, Adams, Mass., has resigned to accept the superintendency of a large cotton mill in Lynchburg, Va.

Woolen.

—Arthur Ames, superintendent of the Sheffield Worsted Mills of the American Woolen Co., Pascoag, R. I., has resigned.

—U. Burke has resigned as overseer of dyeing for the Farnsworth Mills, Lisbon, Me. He has been succeeded by R. M. Crosby, Camden.

—T. W. Barker, of Lowell, Mass., who has been boss dyer for Helliwell & Co., Pittsfield, Mass., for a short time, has resigned, and been succeeded by W. B. Symes, dyer for the Manhattan Print Works, Passaic, N. J.

—W. H. Baldwin has engaged with the French River Textile Co., Mechanicsville, Conn., as boss dyer.

—E. W. Cook, recently boss finisher for Graham, Clark & Co., Adams, Mass., has accepted a similar position at Keene, N. H., in the employ of the Faulkner & Colony Manufacturing Co.

—F. R. Connor, for some time employed as boss carder with the Assabet Mills, Maynard Mass., has resigned.

—O. L. Cahoon, boss dyer at the Reynolds Manufacturing Co., Davisville, R. I., has resigned.

—George C. Crane, superintendent of the Crosby Manufacturing Co., at Glastonbury, Conn., has severed his connection with that concern.

—John Carr is now with the Golden Rod Woolen Mills, Wales, Mass., having accepted the position of boss carder at night with them.

—B. J. Cullinan, for some time superintendent at Collinsville, Mass., has severed his connection with the American Woolen Co.

—John Convery has succeeded Mr. Thompson as overseer of spinning for Dorman Bros., carpet manufacturers, Mascher and Oxford Sts., Philadelphia.

—J. Doyle has succeeded C. Atteridge as boss dyer at the Wanskuck Co.'s mills at Mohegan, R. I.

—William Driscoll, formerly boss spinner for the French River Textile Co., Mechanicsville, Conn., has taken a similar place with the Jefferson Mfg. Co., Jefferson, Mass.

—J. Fitton, boss weaver, is M. O'Connell's successor at the Ramshorn Mills, West Millbury, Mass.

—John Gallagher has succeeded George Rutledge as overseer of carding for Dorman Bros., carpet manufacturers, Philadelphia, Pa.

—Patrick Green is now boss dyer for the Passaic Woolen Co., Passaic, N. J.

—B. Fred Grant, who has done the pattern weaving at the mill of F. Glazier & Son, South Glastonbury, Conn., for the past two years, has been appointed overseer of the twisting and the warp dressing department, to succeed his father, the late Eben Grant.

—J. B. Ball, late boss spinner for the Sheboygan Falls Woolen Mills, Sheboygan, Wis., is now in Philadelphia, Pa.

—George Henderson, formerly in the employ of the Assabet Company at Maynard, Mass., has been engaged as boss weaver by the Cordaville Woolen Co., Cordaville, Mass.

—John Island, superintendent, has been succeeded by John Kennedy at Rawitser & Bro.'s mill, Mystic, Conn.

—A. Jewell has accepted the position of assistant superintendent and designer at the American Felt Company's mill at Glenville, Conn.

—Alfred Lange, formerly proprietor and manager of the East Blackstone Yarn Mill, Blackstone, Mass., has accepted the position of boss carder in the Geneva Worsted Mills, Providence, R. I.

—John Moore, formerly of Centredale, R. I., is now boss dyer at the Rays Woolen Mill, Franklin, Mass.

—George Michie, overseer of weaving for the Sheffield Worsted Mills of the American Woolen Co., Pascoag, R. I., has resigned.

—Thomas North, for some time overseer of the carding department for the Springville Mfg. Co., Rockville, Conn., has resigned on account of failing health.

—George Pettengill, of New Bedford, Mass., has recently been engaged as secondhand of dry finishing in the mill of the Middlesex Company, Lowell, Mass.

—Edward Sims has succeeded Thomas North as boss carder at the Springville Mfg. Co., Rockville, Conn.

—John B. Thickens, Pittsfield, Mass., is now in the employ of the American Woolen Co., at New York.

—William Tage is now boss carder for the Yantic Woolen Co., Yantic, Conn.

—James A. Taylor has resigned his position as boss finisher with the Consolidated Woolen Felt Mills, Amsterdam, N. Y., and returned to his home in Philadelphia. He has filled the above position for the past year, during which time he has made a name for himself in the felt business. He is known as a practical finisher, having been boss finisher at Schuylkill Woolen Mills, Conshohocken, Pa., and well known Philadelphia mills.

—George W. Towne, since 1890 superintendent of the Arlington Mill Corporation, Lawrence, Mass., and previously for a number of years overseer of one of the departments, has severed his connection with that concern, and accepted a position in another state.

—S. H. Thompson is now boss finisher for the Bridgeton Woolen Co., Bridgeton, N. J. He previously was in the employ of the Conshohocken Woolen Co., Conshohocken, Pa.

—Charles Wood, of Fall River, Mass., has succeeded John Cook as wet finisher at the Rock Mills, of Rockville, Conn.

Knit.

—Charles T. Boughton, formerly manager of the Star Knitting Co., Cohoes, N. Y., has recently accepted a similar position with the Boas anufacturing Co., St. Hyacinthe, P. Q.

—Charles J. Copson has resigned as boss spinner for the Perry (N. Y.) knitting Co., and accepted a similar position with the Readville (Mass.) Cotton Mills.

—John Donahoe, of Cohoes, has gone to Centreville, Mich., as superintendent of the Michigan Central Knitting Co. They expect to make a high grade of flat underwear.

—Robert C. Hanker, for six years in the mill of A. V. Morris & Sons, Amsterdam, N. Y., has entered the employ of William B. Charles of that place, taking charge of the knit goods trimming department in connection with Mr. Charles' wool, cotton and yarn business.

—Michael Organ, late superintendent of the Troy (N. Y.) Knitting Company, has engaged in a similar capacity with the Sagamore Knitting Co., Mechanicsville, N. Y.

—Edwin Pickup, of Boston, has succeeded David Gilfillin as superintendent of the Ipswich Mills, Ipswich, Mass. During the past five or six years, Mr. Pickup has acted as agent for the Boston branch of the mills. Mr. Gilfillin has left for Atlanta, Ga., where he will superintend the erection of machinery for a New York firm.

—John Rutherford has been appointed to the responsible position of superintendent of the two large mills of the Glastonbury Knitting Co., located in Addison Village, Conn. Mr. Rutherford was born in South Hadley, Mass., forty-three years ago. He first secured a position in a knitting mill in Plainville, where he remained seven years, and then removed to Glastonbury and found employment in the mills in Addison, then called Eagleville, in 1882. He remained and worked in mill No. 2 for the past eighteen years, filling the position of boss carder for a number of years.

—M. J. Shaughnessy, recently with the New Britain Knitting Co., New Britain, Conn., has accepted the superintendency of the Eagle Knitting Co., Rockton, N. Y.

—George T. Thomayer, of Bennington, Vt., has recently accepted the position of overseer of knitting with the Alpine Knitting Co., at Pittston, Pa.

—Charles A. Wolford has accepted a position as assistant superintendent of the Victor Knitting Mill, Cohoes, N. Y.

Deaths.

—Hon. Adna Brown, President of the Parks & Woolson Machine Co., died at his home in Springfield, Vermont, on January 14th, as the result of a shock sustained November 10th, and from which he never fully recovered.

Mr. Brown was born December 11, 1828, at Antrim, New Hampshire, and was from that sturdy stock which has produced our strong New England type. With very limited educational advantages he raised himself by his indomitable will to a position of wealth and honor in his adopted State.

At sixteen, with his belongings in the traditional bandana handkerchief, he left the farm and began his life battle alone. He spent five years in the mill as a spinner, weaver and loom fixer; from the latter was but a step to machine work and he served two years at Milford, N. H., and came to Springfield and commenced work for Davidson, Parks & Woolson on May 1st, 1850 His ability, energy and faithful service soon received recognition and he was made foreman and later superintendent. The company was incorporated in 1874 under its present name, and in 1879, Mr. Brown and Mr. C. E. Richardson, the present Treasurer, bought Mr. Woolson's interest and Mr. Brown became President, which office he held until his death.

Mr. Brown was the holder of many patents for improvements in Cloth Finishing Machinery, and by his untiring efforts and inventive genius, did much toward establishing his company upon the successful foundation where it has stood these many years.

Until the last few years, Mr. Brown had traveled extensively in the interest of the Parks & Woolson Machine Co. and had a wide acquaintance among the woolen manufacturers, owners, superintendents and finishers. All knew him, and to know him was to become his friend.

He was a zealous and active Republican and has always been identified with the party in its work for the protection of American industries. He was a member of the Home Market Club and the American Protective Tariff League. He had received Republican honors in his State, having occupied both branches of the Legislature. He was one of Vermont's delegates to the National Republican Convention in 1892, and was a member of the committee which drafted the campaign platform for that year. In 1893 he received the appointment of World's Fair Commissioner for Vermont from Governor Fuller.

He was a wide traveler and his letters written on his Oriental Tour have been published under the title "From Vermont to Damascus." At the time of his death he was President of The Springfield Electric Railway Co., also of the Jones and Lamson Machine Co., well known as the builders of the Hartness Flat Turret Lathe. He was always prominent in the enterprises of Springfield, where his loss will be felt most keenly.

Funeral services were held at the First Congregationalist Church on Wednesday, January 16th.

—Christopher Y. Wemple, a member of the firm of Garner & Co., manufacturers of print goods, died of pneumonia, in New York, last month. He was born 61 years ago in the Mohawk Valley, and when seventeen years old went to New York City and secured a place in the employ of the firm of which he afterward became a member and the manager. He leaves a wife and two sons.

—Joseph McCreery, a well-known and esteemed resident of Fall River, Mass., died suddenly of heart disease last month. Mr. McCreery was the first superintendent of the Weetamoe Mills, leaving there to accept the superintendency of the Shove Mill, when that mill was completed in 1875. He was actively engaged in the mill business until about the year 1883, when he retired and had since lived on his farm.

—Joseph Healy, agent and treasurer of the Osborn Mills, Fall River, Mass., died last month. Mr. Healy took charge of the mills at the time of their organization in 1872, knowing little or nothing about the practical work of manufacturing, but he became an expert before his death. At various times he occupied many prominent places in political and financial circles. He leaves no immediate family, his wife having died within a year.

—Colonel John Bracewell, one of the owners and manager of the Windsor Manufacturing Co., died in North Adams, Mass., January 6, aged 63 years. He was a native of England, and had been connected with print works in Lowell, Dover, N. H., and North Adams. He went to North Adams in 1881, and took charge of the Freeman Mfg. Co., and since the reorganization of the company into the Windsor Company, had been at its head. Col. Bracewell had been very prominent in the business, social, religious and political affairs of the city, and his death was universally regretted.

—Francis Shroeder, a cotton mill owner and a business associate of the late ex-Mayor Strong of New York, died January 8, in Lancaster, Pa., aged 82 years. At the time of his death he was a director of the Griswold Worsted Co., of Philadelphia; president of the Conestoga Fire Insurance Co. and a trustee of Franklin and Marshall College. In 1888 he was a delegate to the national convention that nominated Harrison for President.

—Edward C. Damon, who died at Concord, Mass., recently, was prominent in the woolen manufacturing business for many years. He assumed control of the mill which his father had purchased in Concord, upon the latter's death, and at

the end of five years purchased the mill from the estate. The deceased continued to run the business until 1885, when a stock company was founded, with Mr. Damon at the head. In 1892 the firm was discontinued, and the plant is now occupied by the Concord Rubber Co. Mr. Damon was president of the Concord National Bank and active in the town's social as well as business life.

—Homer F. Locke, of the firm of Deering, Milliken & Co., died in New York, recently, aged 64 years. At the time of his death, he was also president of the Great Falls Woolen Mills, Somersworth, N. H.

—Samuel E. Holden, president of the Napa Woolen Co., of Napa, Cal., died in that city December 31. Mr. Holden was born in Concord, N. H., in 1845. He went to Napa City in 1875.

—John Bardsley, formerly city treasurer of Philadelphia, and the past few years connected with the Philadelphia Linen Co., died recently. For many years he was the proprietor of the Bradford Mills, where he made worsted yarn and cloth.

—John P. Henry died at an early hour of the morning of January 17. For many years he was treasurer of the Crystal Spring Bleaching and Dyeing Co., Fall River, Mass., and at the time of his death was its agent. He had been prominent in business, political and social affairs, and leaves a widow and three brothers and three sisters.

—Paul S. Holsapple, an old resident and prominent knit goods manufacturer of Cohoes, N. Y., died January 24, after a long illness. He was associated with Benjamin F. Clarke, now deceased, under the firm name of Clarke & Holsapple, in the knit goods business, conducting one of the largest plants in the city. He had been in ill health for over a year.

—Charles E. Stanfield died last month. Mr. Stanfield gained fame as a discoverer of a process by which unshrinkable underwear is made. He began the manufacture of woolens in 1885, at Tryon, P. E. I., and in 1892 established a knitting company at Truro, which he continued with much success until within a few years ago. His sons have since carried on the business.

—George W. Sawyer, paymaster at the Methuen Company's mills, Methuen, Mass, died suddenly last month. He had been connected with the Methuen Co. since 1888.

—H. H. DeLeon, of Charleston, S. C., died last month in the seventy-second year of his age. He was a leading broker of the city and was largely interested in cotton mills throughout the state. He was a member of the famous DeLeon family of the South.

—Elbridge Healey, for 42 years an employee of the Hamilton Woolen Co., Amesbury, Mass., dating back to the old Salisbury Mills, died early last month, in his seventy-eighth year.

—Cyrus G. Beebe, head of the firm of Lucius Beebe & Co., cotton dealers, Boston, died at his home in Framingham, January 28. He entered the office of his father, who was one of the most extensive cotton dealers in New England, and after attaining his majority, became a partner in the business, and a few years later, upon the retirement of Lucius Beebe, carried it on alone. His brother Frederick was admitted as a partner several years ago. Since 1884 he has been president of the South Reading National Bank of Wakefield, president of the Wakefield Real Estate Association, a member of the Wakefield Board of Trade, and a director in the Massachusetts Loan & Trust Co.

—Edward F. Britt, a well-known woolen dyer, of the firm of Kennedy & Britt, of Philadelphia, died Jan. 24th, of pneumonia, at his home in West Conshohocken. He learned the trade of dyer, and served as boss dyer for George Bullock & Co., for twelve years. Since 1883 he has successfully conducted the large dyeing establishment at Nassau and Jefferson Sts., and was held in high esteem. His son, Benjamin, has been associated in the business.

—Gustave Lunden, one of the oldest and most experienced machinists employed in Cheney Brothers' silk mills, South Manchester, Conn., died last month. He had been with Cheney Bros. for the past twenty-five years.

—Charles H. England, a widely known and respected overseer of woolen weaving, died the 13th of December at West Conshohocken, Pa., after a very short illness of about three days from pneumonia. His son, E. L. England is also engaged in similar work.

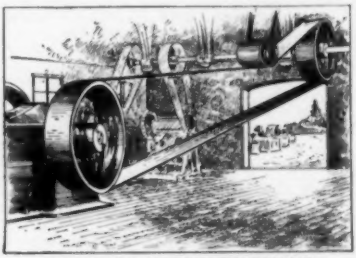
—Lucien G. Dockham, proprietor of the Otter River Kersey Mill, Otter River, Mass., committed suicide Jan. 9th. Twenty years ago he came to Otter River as superintendent of C. B. Snyder Co.'s woolen and shoddy mill. Upon the death of Mr. Snyder, about seven years ago, Mr. Dockham leased the mill and ran it as the Otter River Kersey Mill. Worry over financial troubles and depression in his business are the only known reasons that could have led him to commit suicide.

—William H. Broderick, overseer of spinning for the Endrick Woolen Co., Great Barrington, Mass., died at his home early last month. He had been in the employ of the Endrick Woolen Co. for over twenty years.

—Henry B. Butman, for many years an overseer at the mills of the Hartford Carpet Company, Thompsonville, Conn., died Jan. 3d, in his seventy-first year.

—James Keeley, overseer of the weaving department of the Seaconnet Mills in Fall, River, Mass., died last month.

—John B. Ogier, foreman of the ribbon weaving department of the Adelaide Silk Mill, Allentown, Pa., died recently. He was also a founder and director of the Mutual Loan & Building Association.



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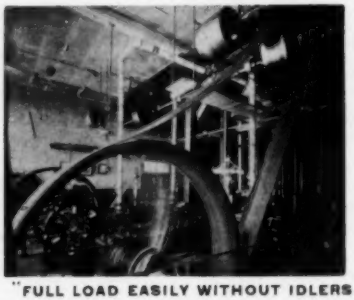

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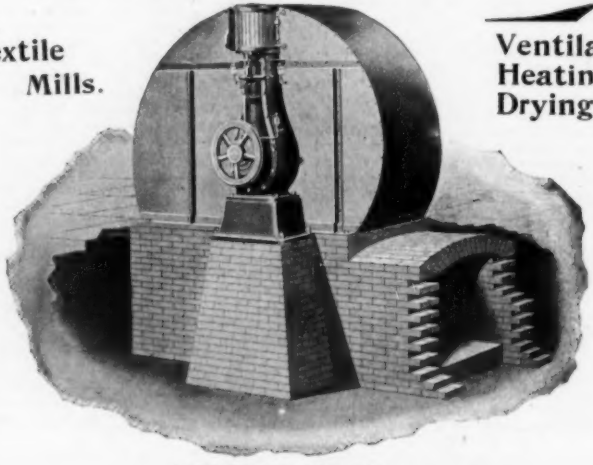

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BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.
Appraisals.
American Appraisal Co, Milwaukee, and 804 Park Row Bldg, New York.
Arc Lamps.
Lea Manufacturing Co., Elwood, Indiana.
Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Lockwood. Greene & Co., 93 Federal St., Boston, Mass.
Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.
Asphalting & Asphalt Materials.
Warren Bros. Co , 143 Federal St., Boston.
Asphalt Roofing.
Warren Bros. Co. 143 Federal St., Boston.
Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.
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Bands and Labels.
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Cling Surface Co., 168 Virginia St., Buffalo, N. Y.
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Booth, Benj. & Co., Philadelphia.
Buck Card Clothing Co., Palmer, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
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Roy, B. S. & Son, Worcester, Mass.
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Brown, W. H, Mechanic St, Worcester Mass.
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Roessler & Hasslacher Chemical Co, 100 William St, New York.
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Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Color Finding Device.
Chromatic Device Co., Brooklyn, N.Y.
Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.
Commission Merchants (Dry Goods, Knit Goods).
Hirschman, H. 419 Broome St., New York.

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Warren Bros. Co., 143 Federal St, Boston.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.

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Phillips Co, The Thomas, Providence, R. I.

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American Bridge Co., New York.

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Link Belt Machinery Co., Chicago Ill.

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Draper Company, Hopedale, Mass.
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Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G & Co., Boston, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
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Stoddard, Haserick, Richards & Co, Boston, Mass.
Whitin Machine Wks, Whitinsville, Mass.
Woonsocket Machine & Press Co, Woonsocket R. I.
Worcester Warp Compressing Machine Co., Worcester, Mass.

Cotton Openers and Lappers.
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Howard & Bullough American Machine Co, Pawtucket, R. I.

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Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
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Decoration Wash for Interiors.
Moore, Benj. & Co., Brooklyn, N. Y.

Designer.
Hendry, T., 406 W. 36th St., N. Y.

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Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
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Butterworth, H. W. & Sons Co., Philadelphia.
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Philadelphia Textile Machinery Co, Philadelphia, Pa.
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Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

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Dyers, Bleachers and Finishers.
American Yarn Printing Works, 134-150 North 22d St., Philadelphia.
Brophy's, T, Sons, Jasper St, Philadelphia
Capstick, John & Sons, Montville, N. J.
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Fidelity Finishing Works, Philadelphia, Pa.
Firth & Foster Co, Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Lorimers, The Wm. H. & Sons Co., Phila.
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Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pond Lily Co., New Haven, Ct.
Rowland, Samuel, Schuylkill Haven, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros., Somerville, Mass.
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Delahunty Dyeing Machine Co., Pittston, Pa.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Frank's Wagon Works, 2731 N. 6th St., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Hopkins, Machine Works, Bridgeton, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Knapp, C. H., Paterson, N. J.
Lincoln, The, Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co., Springfield, Vt.
Phenix Iron Foundry, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
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Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M , Philadelphia, Pa.

Dyestuffs and Chemicals.
Anchor Color Mfg. Co, 464 Cherry St, New York.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston.
Dillon & Co, 20 Cedar St, New York.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Geisenheimer & Co, 189 Front St, New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Johnson, Wm. G, & Co, Uncasville, Conn.
Jones, J. Howell, 18 Burling Slip, New York.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
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Merrimac Chemical Co, Boston, Mass.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Roessler & Hasslacher Chemical Co, 100 William St., New York.
Schoellkopf, Hartford & Hanna Co., Philadelphia.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
Vila, H. S., 115 So 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

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Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven, Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Humphrey, S. K., 53 State St., Boston.

Electrical Construction.
General Electric Co., 44 Broad St., New York.
Philadelphia Electric Construction Co., Philadelphia.

Electric Fans.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
American Bridge Co., The, New York.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co , Akron, Ohio.

Fans—Exhaust and Ventilating.
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Feed Water Heaters.
Green Fuel Economizer Co., Matteawan, N. Y.
Pendleton, Walter & Co., New York.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Phœnix Iron Foundry, Providence, R. I.
Scaife, W. B. & Sons, Pittsburg, Pa.

Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
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Fireproof Construction.
American Bridge Co., The, New York.

Flax, Hemp, Jute and Ramie.
Morgan, E. A., 54 Franklin St., N. Y.
Eichmann & Sternberg, 530 Broadway, N. Y.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Frank's Wagon Works, 2731 N. 6th St., Philadelphia.
Hopkins, Machine Works, Bridgeton, R. I.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F , Boston.

Glazed Yarns.
Morgan, E. A., 54 Franklin St., N. Y.
Eichmann & Sternberg, 530 Broadway, N. Y.

Harness Twine.
Morgan, E. A., 54 Franklin St., N. Y.
Eichmann & Sternberg, 530 Broadway, N. Y.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Labels.
Decker, Foster Co., Philadelphia, Pa.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co , Boston.
Rusden Machine Co., Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger & Co, Edgings, Germantown Phila, Pa.
Fleming & Chapin, Philadelphia.
Hepner & Horwitz, Lacings, 40 Howard St, N. Y.
Kavanaugh, Geo. W., Cohoes, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila. Pa.

Knit Goods Finishing Machines, Crochet, Etc.
Eclipse Machine Co., Sanquoit, N. Y.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Wilicox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.
Lindley, G. W., 5122 Wakefield St., Germantown, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery.
American Knitting Machine Co., Woonsocket, R. I.
Antisdel, E. M., 12 Miller St., Utica, N. Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 John St., Philadelphia.
Campbell & Clute, Cohoes, N. Y.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Fisher Ktg. Mch. Co., Utica, N. Y.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Lindley, Geo. W., 5122 Wakefield St., Germantown, Pa.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.

Knitting Needles and Supplies.
Breedon, Wm, & Son, Amsterdam, N. Y.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co , Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Kavanaugh, Geo. W., Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Lydall, H, & Foulds, Manchester, Conn.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Page Needle Co , Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St. Phila, Pa

Looms.
American Loom Co., Readville, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St , Phila., Pa. (For wire.)
Keystone Knitting Machine Mfg. Co., 40 No. 7th St., Phila.
Kilburn, Lincoln & Co, Fall River, Mass.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Whitin Machine Works, Whitinsville, Ms,
Woonsocket Machine & Press Co, Woonsocket, R. I.

Loom Pickers.
Loom Picker Co., Biddeford, Me.

Lubricators
Ameledema Oiliess Bearing Co., Berkeley St , Wayne Junction, Philadelphia.
Dixon, Jos., Crucible Co, Jersey City, N. J.

Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J. Paterson, N. J.

Mechanical Draft.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Hermon St, Worcester Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg , New York.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.

Mercerized Yarns.
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Mill Brushes.
See Brushes.

Mills For Sale.
Denny, R. B., 143 Federal St., Boston.

Mill Builders and Engineers.
American Bridge Co., The, New York.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Dixon Lubricating Saddle Co., Bristol, R.I.
Dodge Mfg. Co., Mishawaka, Ind.
Easton-Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
National Supply Co., Paterson, N. J.
Sweet & Doyle, Cohoes, N. Y.
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napper Clothing.
Columbia Napper Clothing Co., 81 Holly St., Lawrence, Mass.

Napping Machines.
American Napping Machine Co, Williamstown, Mass.
Ardrey, S. B, & Sons, Bristol, Pa.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.

Neck Shaping Machine.
Eclipse Machine Co., Sanquoit, N. Y.

Noils (Silk.)
Ryle, Wm & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Non-Shrinking Process for Wool.
Haigh, Frederic, 660 E. 23rd St., Paterson, N. J.

Novelty Yarns.
Eichmann & Sternberg, 530 Broadway, New York.

Numbering Machine.
Bates Machine Co., 346 Broadway, New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.

Paint.
Moore, Benj. & Co, Brooklyn, N. Y.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.

Perforated Metal.
American Perforated Metal Co., 171 Wooster St., New York.
Beckley, A. J. & Co., Garwood, N. J.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Loom Picker Co., Biddeford, Me.

Picking, Carbonizing and Garnetting
Garfield Woolen Co, Garfield, N. J.

Pipe Covering.
Keasby, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Ameledema Oiless Bearing Co, 149 West Berkley St, Wayne Junction, Pa.
Christiana Machine Co., Christiana, Pa.
Dodge Mfg. Co , Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Lambeth Rope Corporation, New Bedford, Mass.
Lameth Rope Co., New Bedford, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Saginaw Manufacturing Co., Saginaw, Mich.
Taylor, J. W., Mfg. Co., Mt. Holly, N. J.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford. J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Phillips Co, The Thomas, Providence, R. I.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Printers (Fabrics and Yarn.)
Capstick, John & Sons, Montville, N. J
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pulley Covers.
Warren Mfg, Co., Chicago, Ill.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.

Quills.
Parker, Henry Co, Springfield, Vt.

Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y.

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.

Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.

Roofing, Gravel, Slag and Composition.
Eastern Granite Roofing Co., Jersey City N J

Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.

Rope Transmission.
American Mfg. Co., New York.
Dodge Mfg. Co , Mishawaka, Ind.
Lambeth Rope Corporation, New Bedford, Mass
Lameth Rope Co., New Bedford, Mass.

Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 980 Manton Ave. Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford. Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I.

Scales
Sweet & Doyle, Cohoes, N. Y.

Schools.
American Correspondence School of Textile, New Bedford, Mass
French Textile School, Atlanta, Ga.
Georgia School of Technology, Atlanta, Ga.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Separators.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works (Arthur Birch), Arlington Heights, Mass.
Birch Bros., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Excelsior Sewing Machine Co., Philadelphia.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co , 66 No. 4th St., Philadelphia.
Nye & Tredick, 606 Arch St, Phila, Pa.
Rusden Machine Co., Warren, R. I.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Union Button Sewing Mch. Co., 164 High St., Boston.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.
Shuttles.
See Bobbins, Spools, Shuttles, Etc.
Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton. Mass.
Rusden Machine Co., Warren, R. I.
Webendorfer & Walling, Paterson, N. J.
Silk Yarns.
Eichmann & Sternberg, 530 Broadway, New York.
Merchant & Co., Philadelphia, Pa.
Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.
Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.
Sizing, Starch and Gums.
Stein, Hirsch & Co, 165 Duane St, New York.
Sky Lights.
Drouve, The G. Co., Bridgeport, Ct.
Merchant & Co., Philadelphia, Pa.
Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.
Soaps.
India Alkali Works, Boston, Mass.
Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Whitin Machine Wks, Whitinsville, Mass.
Spindle Tubes.
Bamford & Smith, Pascoag, R. I.
Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.
Spinning Frames.
See Cotton Machinery.
Spinning Frames for Wool
Woonsocket Machine and Press Co., Woonsocket, R. I.
Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.
Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Spools. *See Bobbins, Spools Shuttles, Etc.*
Spool Cotton for Mfrs. Use.
Standard Thread Co., New York.
Warren, W. Thread Works, Westfield, Mass.
Sprinklers
International Sprinkler Co., Philadelphia, Pa.
Stamps for Hosiery.
Smith & Meinken, New York.
Wells, Wilfred, 505 W. Lehigh Ave., Philadelphia.
Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.
Pendleton. Walter & Co., New York.
Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.
Steam Engines.
American Blower Co , Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Pendleton, Walter & Co., New York.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.
Steam Surface Coverings.
Keasbey, Robert A., New York.
Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia
Rusden Machine Co., Warren, R. I.
Jenkins Bros., New York.
Sturtevant Co., B F., Boston.
Steam Valves.
Jenkins Bros., New York.
Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co. Warren, R. I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No 9th St, Phila, Pa.
Tapes, Braids and Edgings.
Cathcart, John, & Co, 115 Franklin St, N. Y
Fleming & Chapin, Philadelphia.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.
Telephones.
Mianus Electric Co , Mianus, Conn.
Philadelphia Electric Construction Co , Philadelphia.
Plummer, F. O. 620 Atlantic Ave., Boston.
Temples.
American Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.
Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.
Tension Pulleys.
Ameledema Oilless Bearing Co., Wayne, Junc., Phila. Pa.
N. E. Ventilating & Heating Co, 930 Manton Ave. Providence, R. I.
Testing Machines.
Howard, Geo. C., 1783 Barker St., Phila., Pa
Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.
Tom Tom.
Frank's Wagon Works, 2731 N, 6th St., Philadelphia.
Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Transmitter for Sewing Machine.
Allen & Overrocker, 2427 Mascher St., Phila.
Trimmers.
Excelsior Sewing Machine Co., Philadelphia.
Turbines.
(See Water Wheels.)
Valves—Rubber.
Boston Belting Co., Boston, Mass
Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve, The G. C ., Bridgeport, Ct.
National Pancoast Ventilator Co., Philadelphia, Pa.
New England Ventilating & Heating Co, Providence. R. I.
New York Blower Co., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
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Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass
Wing, L. J. Mfg. Co., 95 Liberty St., N. Y.
Wall Whitening.
Moore, Benj. & Co, Brooklyn, N. Y.
Warp Stop Motions.
Am. Loom Co., Readville, Mass.
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Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

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Am. Watchman's Time Detector Co., Broadway, N. Y.
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Nanz & Co, 127 Duane St., New York.
Philadelphia Electric Construction Co., 1328 Chestnut St., Philadelphia.

Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.

Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Alcott, T. C., & Son, Mt. Holly, N. J.
Bradway, C. P., W. Stafford, Ct.
Christiana Machine Co., Christiana, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.
Taylor, J. W. Mfg. Co., Mt. Holly, N. J.

Water Wheel Governors.
Bradway, C. P, West Stafford, Ct.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.

Winders. (**Back.**)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (**Hosiery.**)
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Dodge Mfg. Co., Mishawaka, Ind.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.
Stoddard, Haserick, Richards Co., Boston.

Wool Extracts.
Garfield Woolen Co, Garfield, N. J.

Wool Scouring.
Philadelphia Wool Scouring & Carbonizing Co., Philadelphia, Pa.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.

Woolen and Worsted Machinery.
Altemus, W. W, & Co, 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arlington Mch Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave , Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
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Yarns, Threads, Etc.
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Charles, W. B., Amsterdam, N. Y.
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Banding.
Lameth Rope Co., New Bedford, Mass.
Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Argo Mills Co., 216 Chestnut St., Phila, Pa.
Catlin & Co. New York and Boston.
Colchester Mills, 346 Broadway, New York.
Dana Warp Mills, Westbrook Me.
Dexter Yarn Co., Pawtucket, R. I.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Flax, Hemp, Jute and Ramie.
Fawcett, Hughes, 115 Franklin St., N. Y

Gassed Yarns.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co, New Bedford, Mass,

Glazed Yarns.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co. J. R, Windsor Locks, Ct.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.
Cranston Worsted Mills, Bristol, R. I.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.
Argo Mills Co., 216 Chestnut St., Phila., Pa.
Boyer, B. F, & Co, Camden, N. J.
Colchester Mills, 346 Broadway, New York.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass
Wolstenholme & Clark, Baker and Mallory Sts., Manayunk, Pa.

Mercerized Yarns.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co., Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Wolstenholme & Clark, Baker and Mallory Sts., Manayunk, Pa.

Mohair Yarns.
Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I.
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut st, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Magid Hope Silk Mfg. Co., Milford, Mass.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Skerry, A. T. & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campion, Richard, 17 Bank St., Philadelphia.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Pocasset Worsted Co., Thornton, R. I.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

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1823 **Supt., Designer or Overseer** of weaving. Age 42; English; married. Large experience on fancy cassimeres, cloakings, beavers, meltons, plaid backs, golf caps, rugs, union worsted suitings and government work, flannels, face-finished goods, and can make them up from the yarn. Is familiar with Crompton & Knowles and English looms.

1683 **Woolen Supt.** Large experience. Last mill where he was employed was for five years overseer and 15 as superintendent. A good man on flannels, sackings, skirtings, woolen dress goods and domestic woolen goods. Well up in weaving, dyeing, carding, etc., and has a general knowledge of all departments in a Western woolen mill. Englishman; married. Refers to past employers.

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1398 **Woolen Superintendent or Designer** of recognized ability and at present employed as a superintendent of 36 set woolen and worsted mill. He finds it necessary to remove from New Jersey on account of his wife's health. His past record is first-class and this is an unusual opportunity to secure the services of a first-class superintendent.

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1216 **Woolen Supt.**, boss weaver or designer. Has worked on worsteds, cassimeres and dress goods. Age 37; married; American. Worked in first-class N. E. mills. Can furnish references.

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1806 **I would like** to correspond with some president or manager of some cotton mill now running or any new mill now being constructed, who would like to engage a competent superintendent. I want to engage with a cloth mill of any number of spindles not exceeding 10,000. My price is $1,000 a year, with no loss of time. I am a practical manufacturer, of long experience as overseer and superintendent. I am a good manager, full of push and energy, and I have a good record as a hustler for big productions and making money for my employers. Strictly temperate.

1689 **Supt. or Assistant Supt.** Age 37; American; married. Large experience as overseer and first-class references. At present employed as overseer, but is capable of filling a superintendent's position. Worked on prints, twills, sheetings, cambric and fancies.

1802 **Supt.** or agent of small cotton or knitting mill, or would take a position as overseer of cotton carding. 33 years old; American. Has worked on sheetings, shirtings and fancy goods, and hosiery and mill supplies. Wants about $25 per week.

1453 **Superintendent** desires position in a cotton mill. Age 28; married; American. Has worked on prints, fine sateens, sheetings, ginghams duck, denims, cottonades, ticks, awnings and domets. Is familiar with all makes of spinning, spooling and warping machinery. Refers to past employers.

1806 **Supt. of a Cotton Weaving Mill.** colored or white, 5,000 to 10,000 spindles; or overseer of weaving in a cotton mill, on any kind of work and any size mill, white or colored. Will go East, West, North or South, Canada or Mexico. Has had good and long experience. A married man; 40 years old, strictly temperate. Can give references as to ability and character.

189 **Cotton Superintendent** wants position in Northern mill. Has been in charge of Southern mills for 7 years. Previous experience in N. E. Is well known among mill men, and can furnish the best of references. Age 39; married.

1772 **Supt. or Overseer of Weaving.** Age 38; American; married. Lawns, fine sheetings and shirtings, sateens, twills, fancies, denims and cottonades. Is familiar with Whitin, Lowell, Draper, Northrop and English machinery. Not at present employed.

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WOOLEN CARDERS.

1798 **Boss Carder,** or carder and spinner. Age 49; English. Large experience on fine, medium and coarse wool, also wool, cotton and shoddy mixes, cassimeres, flannel , blankets, kerseys, meltons, beavers, government goods, etc. Excellent references and first class man in every respect. Was nine years boss carder in England and has held good positions in this country as boss carder and spinner.

1799 **Boss Carder.** Age 32; American; married. Has worked on beavers, kerseys, chinchillas, cloakings and suitings. Is familiar with Davis & Furber, Cleveland and Furbush machinery. Wants not less than $2 50 per day. Excellent references.

1701 **Boss Carder** Age 39; English; married. Has had large experience as boss carder in Canadian mills, also held positions in England before coming to this country. Has worked on all kinds of wool, cotton waste, mungo and shoddy mixes, cassimeres, dress goods, knit goods, blankets. Can take position at once. Excellent references.

1827 **Overseer of Woolen Card** Room. Has worked on blankets, robes, friezes, cheviots, kerseys, flannels, knit goods, cassimeres, hair lines and unions. Age 34; American; married. Wants not less than $3.00 per day.

1801 **Overseer of Carding.** Age 27; German; married. Dress goods, knit goods, wool and cotton mixes, blankets and paper makers' felts, Is familiar with all kinds of American machinery. Wants $3.00 per day.

COTTON CARDERS.

1736 **Overseer Cotton Card Room** and Combing. Age 39; married. Has been overseer for past nine years. In last position seven years. Started up two large rooms with combers in each. Thoroughly understands all machinery in card room, and has run all grades of cotton. Can furnish references, if required.

1751 **Carder and Spinner.** Can give first-class references as to character and ability. Has had twenty-one years' experience as overseer on both American and Engligh systems of carding. An American; 45 years old. Has worked on fine and coarse, also colored cotton.

1718 **Second-Hand in Cotton Card** Room. Has had 10 years' experience in N. E. mill. Understands all makes of machines. Can make all changes from 1 to 20 hank. Has taken course in cotton spinning at American Correspondence School of Textiles, New Bedford. First-class references. Would start at $2 00 a day. Young man and strictly temperate.

1027 **Overseer of Cotton Carding.** Age 32; American; married. Has worked on coarse and fine yarn, from 10's to 170's, carded and combed, and is familiar with English and American makes of machinery. Will not work for less than $3.50 per day. Excellent references.

1782 **Overseer Cotton Carding.** Age 25; single. Fine carded and combed cotton yarns. Is familiar with all makes of machinery. Wants $3.50 per day.

WOOLEN SPINNERS.

1691 **Boss Spinner** Large experience in first-class N. E. mills on flannels and all kinds of fancy cassimeres. Englishman; age 50; married. Refers to past employers.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2-; English; single. Can furnish references as to ability and character.

633 **Woolen Mule Spinner** desires to move from Maine on account of wife's health. At present in good position. Age 37; married, Scotchman.

1648 **Boss Carder and Spinner.** Age 47; American. Has worked on cassimeres, flannels, beavers, knit goods, dress goods, blankets, shawls, all kinds of mixes, also shoddy. Understands spooling and twisting, and making novelty yarns. Temperate, steady, and refers to past employers.

1732 **Boss Spinner.** Age 54; English; married. Has had a large experience as fixer and boss spinner in N. E. mills. Dress goods, beavers, kerseys, shoddy and shoddy mixes blankets, jute, worsted tops and felts. Refers to past employers.

1820 **Overseer in Woolen Spinning.** Has worked on ladies' dress goods, cassimeres, cheviots, beavers, all wool, and wool and cotton, and wool, cotton and shoddy mixes, from 1 run to 9. Davis & Furber, Johnson & Bassett and Platt mules and jacks. Refers to past employers. Wants $2.50 per day.

COTTON SPINNERS.

1663 **Overseer Mule Room.** Eleven years' experience in Fall River mills, and for the past ten years overseer of mule room. Excellent reference from present employer. Age 44, married.

1753 **Overseer of Spinning.** Wants position in the South. Has worked on prints, flannels, sheets, colored double nap flannel dress goods. Age 27; American; married. Excellent references from past employers.

1822 **Overseer of Cotton Mule** Spinning. Understands Mason and English makes of mules. Has worked in mule room sixteen years, five years as second hand and a year and a half as overseer. 28 years old; married; steady and temperate. Would like to get work in N. E. or New York States. Has worked on colored hosiery yarn and filling.

1750 **Overseer of Ring Spinning,** Spooling and Warping. Has been overseer in large mills, and can furnish best of references. Age 28; American; single. Has worked on ducks, prints, sheetings and fancies.

1779 **Boss Mule Spinner.** Now employed in South, but wants to change on account of climate. Has had 15 years' experience as a cotton spinner, working up to overseer from back boy. Is well acquainted with all makes of English mules, also latest Mason mules, and is familiar with the working of all drafts and twists. Married; 30 years old, and temperate.

1739 **Overseer of Ring Spinning,** Spooling and Warping. Age 45; married. Wants to return to New England. A thoroughly practical spinner, and can furnish references from any mill where he has worked, and is a first class manager of help. Wants not less than $4.00 per day.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old, as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1712 **Second-Hand or Overseer of Weaving.** Age 29; American; single. Has some knowledge of designing. Has worked on fancy worsteds, cassimeres and cheviots. Wants $2.50 per day to start with. Is familiar with Crompton & Knowles machines.

1688 **Overseer of Weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 38; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1536 **Boss Weaver or Superintendent.** Age 43; married; American. Can run any department in woolen mill, having been in business for himself. Not at present employed. Can take position immediately.

1607 **Worsted Weaver or Fixer.** Will accept fixing job at $2.25 a day. Experience covers worsted coatings, cassimeres, dress goods and jacquard work. Familiar with Crompton and English looms.

1805 **Boss Weaver.** Has worked on fancy dress goods, cashmeres, ginghams, fancy worsteds, coatings, lenos and Jacquards. Has also some knowledge of designing. English; age 36.

COTTON WEAVERS.

1783 **Secondhand or Overseer** of cotton weaving, or assistant designer. Age 25; American; single. Just completing two year course in both designing and weaving. Is a practical loom fixer of three years' experience.

1811 **Overseer of Weaving,** or second hand in large room. Fixed looms for six years in Jacquard shop and has had 18 years' experience as overseer. Has worked on print goods, sheetings, bed ticking, ducks and drills. Age 47; American; widower.

1459 **Fancy Cotton Weaving.** Slashing, etc. Age 36; married. Has worked on all kinds of fancy goods and is thoroughly competent in all departments of manufacturing, with the exception of spinning. Understands velvet and corduroy weaving. Is not at present employed and can take a position immediately.

1425 **Overseer, Cotton Weaving.** Age 38. Married. At present employed in large Mass. mill where he has been for 7 years as overseer. Worked on all kinds of goods and is well experienced. American. Refers to past and present employers.

1449 **Overseer of Weaving or Designer.** Age 38; married; American. Thoroughly capable. Has designed his own goods for eight years, and studied designing for two years. Left last position on account of sickness, and will take a small salary to start. Has worked on all classes of cottons, plain and fancy, and is acquainted with all makes of machinery. Refers to former employers and others.

1828 **Overseer of Weaving.** Has worked on denims, domets, tickings, jeans, ducks, shirtings, dimities, lawns and all kinds of twills, cottons, ginghams, sateens, and fine cambrics. Is familiar with Crompton, Whitin, Mason, Lowell, Draper, Pattee, English, Bridesburg and Knowles looms. Age 35; American; married. Several years' experience as overseer.

KNITTERS.

1749 **Boss Knitter or Fixer** wishes position. Eight years' experience on knitting machinery. Experienced on Standard, Mayo and Hepworth machines. Will accept position in any state.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery. Will work for $2.50 or more, according to position.

1554 **Boss Knitter.** Underwear, Jersey ribbed, lisle, wool, plaited work, silk. Can handle any latch machine. Good references. Age 26; married.

1741 **Overseer of Knitting.** Has had 18 years' experience as overseer. Has worked on wool, worsted and cotton underwear; spring and latch needle machines. Age 33; married. Refers to past employers.

1776 **Boss Knitter.** Had constant experience in the knitting business for the past twenty years. Can handle any kind of goods made on a circular spring needle knitting machine. Age 36; American; married. Excellent references.

1812 **Boss Knitter** on latch needles, or sewing machine fixer. Age 35; American; married. Has had 12 years' experience, and can handle any kind of latch needles. Excellent references as to character and ability.

DYERS.

1626 **Dyer and Finisher,** with experience on plushes, dress goods, mohair and worsted genapped yarns, cotton and woolen yarns, raw stock. At present employed, but will consider position paying $3 a day.

1821 **Boss Dyer.** Age 35; American; married. Worked in hosiery dyehouse for seven years as boss dyer. Has had experience on fast black, lisle finish and extract work.

1809 **Boss Dyer.** Age 33; American. Wants $3.50 per day or more. Wants to change on account of locality. Has worked on fancy cotton yarns, mohair novelty yarns, worsted yarns, raw cotton, raw wool, piece dyes on flannel, mixed cotton and wool and all wool, kerseys and beavers and beavers with cotton warp.

1664 **Boss Dyer.** Age 40; Scotch, married. 14 years' experience as boss dyer. 20 years in all at trade. Has worked on wool, cotton, ramie, worsted, shoddy and union waste dyeing for overcoatings, linings, tweeds, cassimeres, plaids, flannels, and ladies' wear, also on all wool and union piece dyes, hosiery, knit goods, yarns, slubbing. Is practically familiar with scouring, bleaching, carbonizing, speck dyeing and mill soap making.

1778 **Dyer of Wool, Felt,** etc. Age 25; American; married. Refers to past employers.

875 **Overseer of Dyeing.** Age 34; American; single. All classes of wool, woolen and worsted yarns, indigo on worsted yarn and piece dyeing. Not at present employed, and can take position at once. Wants $3.00 per day.

1484 **Woolen Dyer.** Has had a large experience and can furnish the best of references. Age 47. Does not wish to go South or West.

FINISHERS.

1792 **Boss Finisher,** with over 20 years' experience on all kinds of woolen and worsted goods. Learned business in one of the best woolen mills in Scotland and has also had experience in some very good mills in this country. Strictly temperate and steady, and can give good references as to character and ability. Wants position in a good, steady-running mill at once. Age 38 years; married.

1692 **Cotton Finisher and Corduroy** Cutter. Age 31; English; married. Large experience in England and in this country. All classes of corduroys and velvets, cutting, etc., singeing and finishing of cords. Can furnish excellent references.

1663 **Overseer Mule Room.** Has been in present position 10 years' and can furnish most excellent references. Wants to change on account of family. 44 years old. Wants $3.00

1506 **Overseer of Worsted or Woolen** Finishing. Has had full charge of burling, mending, wet and dry finishing and shipping. Has worked on fancy dress goods, cheviots, men's suitings, flannels, thibets and cloakings. Is familiar with English and American machinery. Refers to past employers.

1499 **Overseer of Finishing.** Has worked on kerseys, cassimeres, broadcloths, worsteds, venetians, cloakings, tricots, overcoatings, suitings, shawls, flannels, beavers, dress goods, and face finished goods of all kinds. Was in a large N. E. mill as overseer for 4½ years. Is 45 years of age.

1632 **Boss Finisher** on fancy and piece dye worsteds, kerseys, doeskins, cassimeres, etc., and all kinds of knit goods. A man of unusually large experience for his age and well recommended. Age 29; American. At present employed, but will change for $4 a day.

1804 **Overseer of Finishing.** Wants to change on account of town he is in. Is familiar with all kinds of woolen and worsted machinery, and has worked on kerseys, cassimeres, carriage cloth, worsteds, dress goods, shawls, etc. Age 35; American; married. Wants $3.00 per day. Excellent references from past employers.

DESIGNERS.

1789 **Designer,** or assistant supt. and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock, cotton and shoddy, and with the general work of a woolen mill.

1721 **Asst. Supt. or Designer.** Age 27; American; single. Has worked on all classes of colored cotton goods, plain and fancy, and gray goods. Wants $1200 per year, and can take position immediately.

1816 **Smart Designer,** high class worsteds and coatings and trouserings. Thorough experience leading factory. Now abroad; anxious to find employment in this country. Moderate start.

1445 **Designer or Finisher,** or will take position as supt. of a small mill. German; Protestant; age 36; married. Has worked in several New England mills, and refers to them. Graduate of the Werden Textile School, Saxony. Has worked on kerseys, beavers, cassimeres, cheviots, etc. Is familiar with all makes of American and German machinery.

MISCELLANEOUS.

1735 **Boss Calenderman.** Age 35; English. Is familiar with all kinds of machinery used in bleachery, and has worked on sateens, silesia, cambric, shirtings, sheetings, etc. Wants $3.00 a day. Can furnish references.

1744 **Fixer.** Age 24; American; single. Is familiar with Boss, Invincible, McMichael & Wildman, Brinton, Denny and Victor machines. Wants $15 a week.

1813 **Overseer of Knitting Finishing Room.** Has had seventeen years experience in knitting mills, and understands finishing flat and ribbed goods, sweaters, overshirts and ladies' and children's flat and ribbed underwear. Was ten years with one firm. 35 years of age; single. Can furnish references.

1810 **Dresser Tender.** Age 23; German, single. Is familiar with Davis & Furber and Cleveland dressers. Will not change for less than 20 cts. per hour.

1746 **Overseer Warping and Dressing,** or weaving, warping and dressing. Has worked on woolens and fancy worsteds. Is familiar with Davis & Furber dressers; Draper, Phenix and Lowell Machine Shop warpers; English plain and Crompton looms. Wants $3 a day.

1762 **Chemist.** Age 23; American. Wants a position in dye works, print works or bleachery. $15 a week to start on. Excellent references.

1764 **Engineer and General Repair Man.** Age 45; American; married. Wants $2.50 to $3.00 a day. Over twenty years' experience.

1765 **Overseer Cloth Room, white** or colored. Age 48; American. 25 years' experience as secondhand.

1817 **Chief Engineer or Master Mechanic.** First class man for a cotton mill. Has been employed as machinist in various cotton mill repair shops, and in repair shops building new cotton machinery. Proficient as a draftsman on mechanical drawing. 34 years old; married.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. Would start at $1.25 per day for six months. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

1787 **Overseer or Secondhand** of slashing, drawing in and warping. Age 40. 15 years' experience in a New England mill. Colored work and white work from 18's to 90's. Can take position at once.

1815 **Master Mechanic.** 31 years of age; married; American. Has worked in cotton mills for the past 16 years. Wants to change on account of unhealthy locality. Can furnish excellent references.

1704 **Boss Dyer.** Age 36; English; single. Is familiar with dyeing cotton yarn and warp both for bleaching, fulling and other purposes. Has dyed for the best firms in England, also for export work.

1723 **Dresser Tender.** Age 42; married. 15 years in a mill as overseer. Is familiar with all makes of machinery. Can take place at once.

1351 **Boss Woolen and Worsted Finisher** is looking for a position paying $3.50 or more. Age 31; Has worked on all classes of woolen and worsted goods Can furnish excellent references.

WANTED.

A Dyestuff Salesman for N. E. territory by a leading foreign manufacturer. Must have established trade and acquaintance. State age, length of experience, salary expected, with whom now employed, etc. Address, H. 61., Textile World, Boston, Mass.

WANTED.

An assistant for applying my Grid for Lappers in cotton mills, and to work independently as soon as able to do so, also soliciting orders. As soon as thoroughly proficient pay will be better than average of superintendents, and chances for learning much greater. Applicants must be between 18 and 25 years old, of good health, not married; must have had good schooling, preferably also passed a textile school or high school. State circumference of head over the brows, which must not be less than 22 inches, also stature and weight. State past experience and what pay required at start besides free transportation. Enclose your photo, showing well shape of head. Address, ROBERT SCHAELLIBAUM, Columbia, P. O., S. C.

COMBER WANTED.

A first-class comber man to take care of 32 Hetherington combers. Must be of good character and a practical man. Steady work. Wages, $16.25 per week. "COMBER," care Textile World.

WANTED.

A superintendent in a cotton warp mill, competent to take charge of spooling and beaming in any form, also must be competent to judge of quality of dyeing, and be familiar with woolen and worsted manufacturers as to their need, and also must be competent to go on the road and sell the product of the mill. Address, S. F. F., Textile World.

ROLL COVERER.

I have done the work for a number of the largest cotton and worsted mills in this country, and am well known throughout the trade. Have been in the business 35 years, and can furnish stock and tools. Would be glad to take piecework, if shop is furnished, or would take a place by the day. Can furnish best of references. **Address 1803, care of Textile World.**

Factories, Sites, Powers, Offices.

Inquiries invited. A. ELA, 54 Kilby Street, Boston.

Established 1844.

BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY)

GUN MILL, PATTERSON, N. J.

Manufacturer of all kinds of

SPINDLES, FLYERS, RINGS, TUBES, CAPS, &C.

FOR

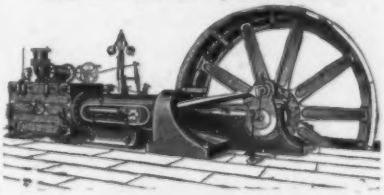
Cotton, Silk, Flax, Woolen and Worsted

MACHINERY.

Roving Spindles and Flyers a Specialty. Light Forgings. Repairing of all kinds.

THE HOOVEN, OWENS & RENTSCHLER CO.,

Hamilton, Ohio.



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Simple, Compound and Condensing, of any size, for all purposes.

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H. HIRSCHMAN,

Direct selling Agent for Hosiery, Knit Goods and Underwear.

Reliable accounts solicited.

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HENDERSON SHADE FINDER

PATENTED IN U. S. A. AND EUROPE.

A DEVICE WHICH

BLENDS COLORS

SHOWING NEARLY 1400 SHADES

BLENDED WITH

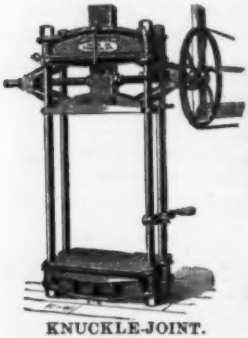
YELLOW, RED, BLUE

WITH PROPORTIONS BY

Color & Weight Scales

PRICE, $5.00.

GEO. K. HENDERSON, 1355 62nd St., BROOKLYN, N. Y.



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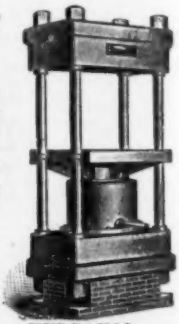

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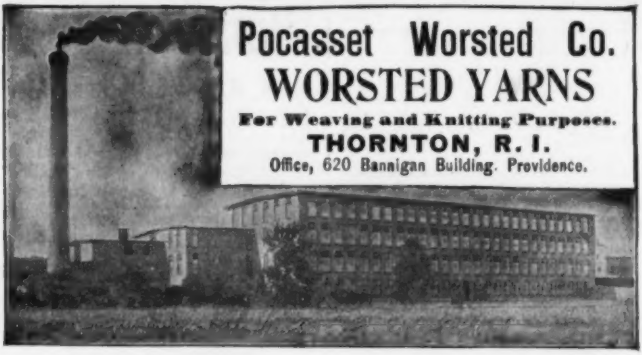
EASTON AND BURNHAM MACHINE CO.,

Pawtucket, R.I.

ALL KINDS OF Spindles USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

IMPROVED UPRIGHT SPOOLERS

TO SPOOL FROM COP, SKEIN, OR BOBBIN.



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For Weaving and Knitting Purposes.

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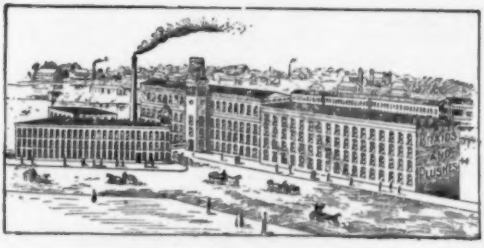

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Mohair and Worsted

YARNS.

Mohair Plushes,

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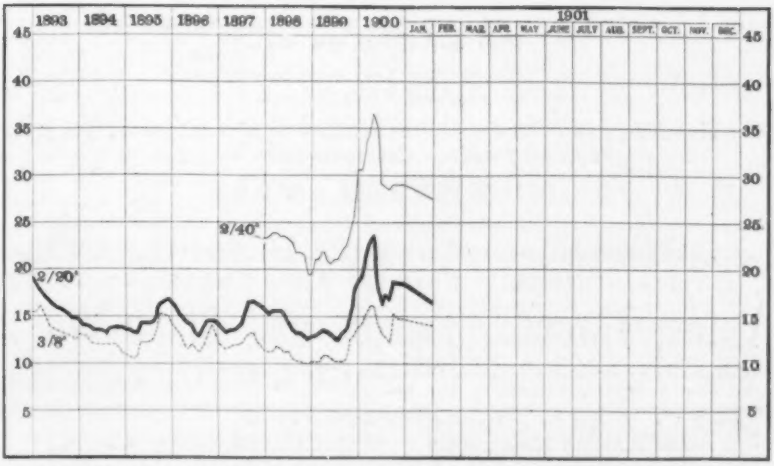
ESTABLISHED 1861.

YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn.

Cotton Yarn. Little can be said of a definite character regarding the cotton yarn market. With cotton yarn soaring to 12 cents, and the market for manufactured goods dull and lower, the yarn manufacturer is between the horns of a dilemma which he is powerless to solve.

He cannot meet the demands of his customers for lower prices, although forced to admit that such demand is well founded. On the other hand there appears to be no immediate prospect of relief by a decline in the raw material. Under these conditions stocks of yarn are rapidly accumulating, and are a serious menace to the trade. The only safe remedy to apply to such a situation, is a prompt and extensive curtailment of production of yarn, which would result in transferring the burden of any surplus stock to the shoulders of the owners of raw cotton, and perhaps temper the enthusiasm of cotton speculators who talk of 12 and 15 cent cotton.

The yarn merchants are making urgent appeals to the spinners to stop making yarn. This has resulted in some curtailment such as the stoppage of night work in a few Southern mills.

This, however, will prove but a drop in the bucket. Radical measures are needed. The manufacturers should get together at once, and base their action, not upon dreams of a world's market that is waiting to be supplied by American mills, but upon a calm, sensible view of conditions as they actually exist in the United States of America.

Quotations under the present abnormal conditions can be but nominal. We quote: We hear of the following prices:

20s cones at 19c. to 19½c.
22s cones at 19c. to 19½c.
24s cones at 19c. to 20c.
30s cones at 21c. to 21½c.
40s cones at 28c. to 30c.

In the weaving, prices are more demoralized than in the knitting trade.

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

INCORPORATED 1884.

STANDARD THREAD CO.,
Manufacturers of

SPOOL COTTON

For the Manufacturing Trade.
NEW YORK CITY.

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

NOVELTY YARNS
In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

20/1	warps are sold at	16c.	to 16½c.
14/1	"	"	14¾c. to 15c.
20/2	"	"	17c.
30/2	"	"	18½c.
24/2	"	"	18c.

Skein yarn at about the same basis.

Worsted Yarn.

Worsted Yarn: Spinners are getting some orders and many inquiries. The demand so far is for all wool cheviots, worsted piece dyed cheviots, cheviots with imitation of undress worsted finish and cheviot mixes.

This is to be a great worsted-cheviot year; clays are selling well, said a leading manufacturer. I have sold my mill up, that is, on clay worsteds, for three months to come, and could have sold it for the whole season, had I wanted to, but my mill on fancy worsteds I have sold very few pieces, and am not so sure of the future, although our season has not fairly opened.

The trend of the market is towards finer grades of cloth, requiring finer yarn, and finer yarns will be in greater demand as the season progresses on account of the firm position of quarter-blood wool, out of which to make cheviot cloth.

Cotton worsteds are not selling, and if weavers are able to buy worsted yarn throughout the season at prevailing prices much worsted yarn will be used, but if, when the season is opened, prices are advanced on worsted yarn, buyers will again take on cotton worsteds.

Many of the weaving mills have been running short of light weight orders, and have during January been partially closed, or running only on sample pieces.

The coming season is to be one of conservatism on the part of buyers. There will be as much cloth used this season as ever, but orders will not all be placed at one time, that is, buyers will place at outset one third of their requirements, and will order duplicates of the first order placed.

Weaving mills will not sell up as

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
216 Church St., New York.
206 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

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Commission Merchants,
122 & 124 Chestnut St., Philadelpia, Pa.
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Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

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MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
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GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. WARPS

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
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Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
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For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

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BRAIDS
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CAPACITY, 50,000 Spindles.

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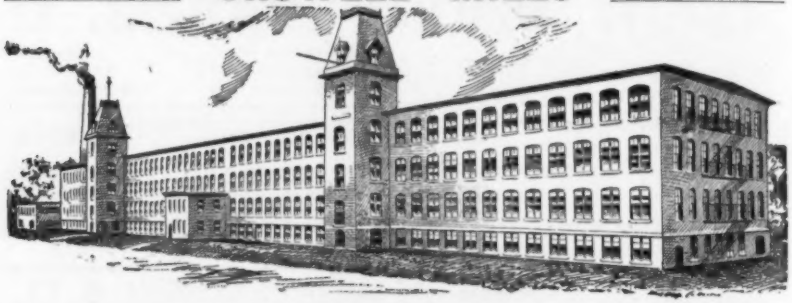

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In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

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The "Drosophore" and "Vortex" Humidifiers.

Over 20.000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

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WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

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AMERICAN AND EGYPTIAN COTTON.

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WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL, WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

rapidly this year as they did last

There are some inferior grades heavy weight season when practically all the mills were sold up by the last of January.

Many of the weavers have been in New York looking after business; few orders have been placed, although the outlook is good for cheviots, fancy worsted have not sold.

At the manufacturers' banquet the business of last year was very well exemplified by the miniature cotton bales placed before each guest. The high price of wool certainly made cotton manufacturers out of a majority of the manufacturers of wool and worsted yarn.

Spinners are trying hard for orders, and prices are on fine yarns 20 cents lower than last year at this time.

Dress goods weavers are preparing for a good run, although are unable to decide what class of yarn they will require, as they know not what style of cloth is going to sell. The result is much sampling and few orders placed for yarn.

Spinners are not booking many orders, although they are trying to induce buyers to get in with orders as early as possible. This may prove good advice later if, as is believed, this is to be a wool and worsted season, as much worsted yarn was replaced by cotton last year, and for several years back.

If the demand comes for worsted yarn, the fact that many spinners have retired from business will be forcibly brought to the minds of weavers, for, while there may be no advance in price there certainly will be a lack of yarn on the market.

Spinners have stock yarn on hand that they are offering at reduced price, and at present are trying in every way to meet buyers' ideas as to price.

Spinners of French spun yarn have booked some orders and, as the season progresses, will secure orders in goodly amounts as the knitters of hosiery and underwear have been holding out of the market; but Feb-

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Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills.
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

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Spinners of
COTTON YARNS.
Sales in charge of
A. D. SALKELD,
908 & 909 New York Life Building, 346 Broadway, New York.

WILLIAM B. CHARLES,
Cotton Yarns, Cotton Cloth, Silesia, Sateens
for the Underwear Trade.
Amsterdam, - N. Y.

LACINGS For Overshirts and Underwear.
Tipped and Tasseled.
HEPNER & HORWITZ, 30 Howard St. N.Y.

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MAIL SAMPLES FOR QUOTATIONS.
Secure our prices on bobbins with metal shields of all kinds,
CHARLES O. MURRAY,
.....NASHUA, N. H.
Manufacturer of **Spools, Bobbins, Skewers, Shuttles,** and Wood Turning, of everydes cription.

Lace Edgings AND Braids

...FOR...

Knit Underwear

SAMPLES FOR SPRING

1901

ARE READY AND ARE UNUSUALLY ATTRACTIVE

PROMPT DELIVERIES LOWEST PRICES

MONTHLY CAPACITY 30,000,000 YDS.

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FLEMING & CHAPIN, 229 Church Street, Philadelphia, Selling Agents.

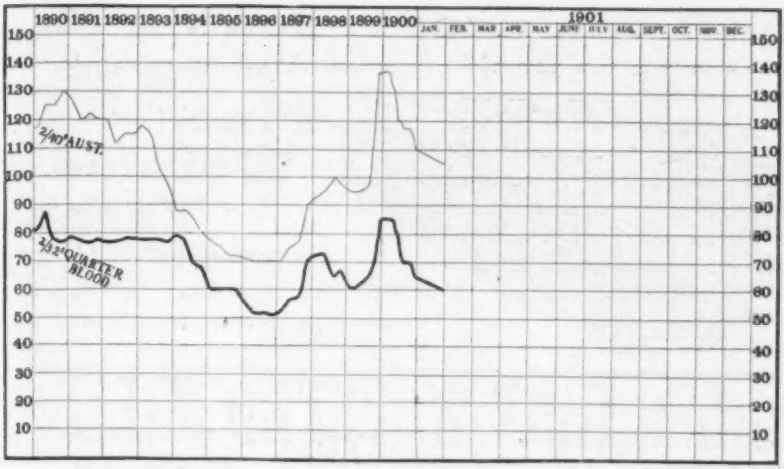

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

ruary and March will do much to clear the situation.

Hosiery manufactured from French spun yarn is becoming more popular each day. Manufacturers of tops are slack on account of the demand for worsted yarn being slack.

Yarns made from ¼ to ⅜ blood stock are more in demand than the finer grades, and prices for the finer grades continue to sag.

We quote:

2/40s Australian, $1.05.
2/40s ½-blood, 80c.

DOMESTIC.

2/40s ½-blood, 77½c.
2/26s ½-blood, 75c.
2/30s and 2/18s ⅜-blood, 68c.
2/30s and 2/18s ¼-blood, 66c.

FRENCH SPUN.

1/40s Delain, 80c.
1/40s ½-blood, 74½c.
1/18s ¼-blood, 63c.

COTTON YARNS
from 2s to 26s single and ply.
SPECIALTY—FIRE HOSE CORD and YARNS put up on tubes wound on Universal System.
WHITTIER MILLS, - - - - - LOWELL, MASS.

MONUMENT MILLS,
Manufacturers of
White, Colored, Fancy and Double and Twist,
COTTON WARPS
4s to 60s.
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NEW HAVEN, CONN.
DYERS OF COTTON PIECE GOODS
HOSIERY AND YARNS

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns **only.**

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM.

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

YARNS

SOLIS : : BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

Woolen Yarn.

Woolen Yarn: Spinners are not busy. The trade has fallen off to a great degree, and mills which have been running full, are now without orders. Spinners complain that buyers are trying to get orders placed for less than cost.

There are undoubtedly orders to be secured within 4 or 5 weeks, as buyers state that they require yarn but are not ready to place orders.

The weavers using backing yarn, have not placed orders because at this writing the heavy weight goods have not been opened, and in consequence do not know what is to be wanted.

The knitters of underwear have not secured orders as yet to any extent and therefore are not buying yarn; last year orders were taken early; this year orders are coming slowly; better garments are to be made at less price than last year.

Manufacturers of hosiery are not buying because they are making cotton hosiery at this period.

Manufacturers of rubber boot lining and linings for leggins or stockinets, are getting but few orders, and in many instances are running only a few machines; this is caused by the open winter.

All this will be changed within a short time, and spinners will have more work than can be well attended to. Already the overcoating trade has started up and some orders for yarn spinning have been received.

There is a good demand for fine Australian thread waste, and some is being imported. This waste is scarce both on this side as well as in Europe, and prices are being maintained. The same can be said of fine noils which are scarce and high.

Black wool is scarce, and has advanced because there is no wool being opened either in the East where it is all old wool, or the west where no wool is being sold.

Here are a few facts which may be of interest and are given without comment. In London the following are the comparitive figures between 1899 and 1900. The total number of shipments to London are as follows:

	1899. Bales.	1900. Bales.
Australian	1,641,000	1,547,000
South African	267,000	156,000
Total	1,908,000	1,703,000

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

Weaving and Knitting Yarns.
Sanitary and Fancy Mixes
Wolstenholme & Clark,
Worsted and Worsted Merino Yarns.
FRENCH SYSTEM.
Mills, Baker and Mallory Sts.
No. Manayunk, Philadelphia. Pa.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
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SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
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186 Franklin Street, CHICAGO.

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DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

WE ARE DYERS OF ALL KINDS OF YARNS AND COTTON WARPS.

We are sure we can give you better work and better service then you can get elsewhere A trial will convince.

T. BROPHY'S SONS, Jasper St., above Clearfield St., PHILA., PA.

MAGID HOPE SILK MANUFACTURING CO.

Home Office and Mills, Milford, Mass.

SPINNERS AND DYERS OF

SPUN and SCHAPPE SILK YARNS.

NEW YORK, 487 BROADWAY. BOSTON, 22 BROAD ST.

Sole representatives for the United States of the

SOCIETA FILATURA CASCAMI SETA of MILANS (Italy)

This is a deficiency of 205,000 bales, more than half of which is Cape produce. Old stocks in London on 1st of January, 1900, footed up 4,000 bales against 155,000 bales today, and considerable of last season's clip are reported to be still at the Cape and River Plate ports.

In Australian Melbourne and Sydney since the resumption of the sales, great animation prevails on both markets, prices are very firm for all dealers and slightly higher for manufacturers' sorts.

Fleece wool is being sold 3 to 4% dearer. Fine wools exceedingly scarce, and bring extreme prices.

In the United States, wool is cheaper in Boston than in the west. Dealers are holding prices, hoping for a good demand to advance prices. If this demand does not come within short time there is no telling what will happen.

¼ to ⅜ blood wool is in a firm position, although South American cross bred is being made to supply the place of domestic wool, as it is cheaper. Business quiet as we are between seasons.

Philadelphia Yarn Market.

There has been little change in the position of yarn, since last report. As orders run out, the spinners are naturally anxious to sell, and buyers are correspondingly timid about buying, fearing lower prices, and from the fact that they are not able to make goods, that will sell, on the high price of yarn.

The fact remains, however, that spinners are not able to buy their cotton any cheaper, and the prices, at which considerable yarn is being sold, are below the actual cost. We feel there is no positive price that can be called a standard today.

A fair grade of Eastern mule spun hosiery yarn is sold basis 18c. for 10s cones.

There are better qualities which are held at ½ to ¾c. higher, but are sold out in small lots, we understand, below the asking price.

Southern yarn, in the usual best quality, frame spun, are sold on a basis of 17c., possibly, as low as 16½ cents for 10s cones.

FIRTH & FOSTER CO.,

Dyers and Finishers of

Dress Goods, Men's Wear and Cloakings, such as Venetians, Armures, Soleils, Crepons, also Silk Warp Fabrics, Cotton Warp Linings, Suitings, Clays, Serges, Worsted Damasks, Tapestries and Shirtings.

Particular attention given to fast colors on cotton and worsted yarns, slubbing and stock dying.

Special black for the silk trade on fine cotton yarns.

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NEW YORK OFFICE: Silk Exchange, 487 Broadway.

FIDELITY FINISHING WORKS,

W. C. MELCHER, Proprietor.

— Finishers of —

Cotton and Woolen Dress Goods, Cassimeres,

Worsteds, Etc.

Office and Works: S. W. COR. MASCHER AND TURNER STS., PHILADELPHIA, PA.

Correspondence Solicited.

The Wm. H. Lorimer's Sons Co.

MERCERIZERS AND DYERS,

DEALERS IN
MERCERIZED COTTON YARNS
All Numbers Up to 140s 2 Ply in
Combed Peelers, Egyptians, &
Sea Islands . . . . . .

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Room 911, N. Y. Life Building
New York City.

R. GREENWOOD & BAULT,

DYERS, BLEACHERS AND **MERCERIZERS**

OF COTTON WARPS AND SKEIN YARNS.

Globe Bleach and Dye Works,
Oxford and Worth Sts., Frankford, Pa.

140 Chestnut St., Philadelphia.

Pawtucket Dyeing & Bleaching Co., BLEACHERS AND DYERS OF

COTTON YARNS AND STOCKINET.

OFFICE WITH BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,
232 FRONT ST., PAWTUCKET, R. I.

DUNCAN & BAILLIE,

COHOES DYE WORKS, NEWCOMB STREET COHOES, N. Y.

Dyers of Raw Cotton, Wool and Knit Goods.

Satisfaction Guaranteed.

Capacity 10,000 lbs. per day. Prompt Deliveries.

DAVIDSON & BROOKE, ORIANNA BLEACH WORKS.

BLEACHERS

Of Turkish Towels, Cotton Yarns, Underwear, Tapes and Hosiery.

☞**Turkish Towels made up to suit the trade and shipped to any point.**

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PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

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Philadelphia Wool Scouring
AND Carbonizing Company.

Fine AUSTRALIAN NOILS a Specialty.

Correspondence Solicited.

JOHN LUNN, Pres. & Mgr., 107 Erie St., Camden, N. J.

which are sold as low as 15½c. for 6s and 8s cones.

On this basis, the finer numbers are sold at ¼c. raise up to 20s, then ½c. advance.

The market is in a demoralized and unhealthy condition, which we believe will react soon. Spinners cannot positively continue to make goods below cost. Any orders placed on present basis, must certainly be good value to the purchaser.

We quote:

8/3 carpet skeins at	14	to 14½c.
14/2 carpet skeins at	15	to 15½c.
20/2 skeins at	16½	to 17c.
16/3 slack skeins at	15½	to 16½c.
5/1 skeins at	14½	to 15c.

American Knitting Machine Company.

The main office of this company has been transferred to Philadelphia, in the Knickerbocker Building, corner 6th and Arch Streets. This office will be in charge of H. E. Ashmore, general manager. The manufacturing will be done by the Taft, Pierce Manufacturing Company, Woonsocket, R. I., as heretofore, and W. P. Young will continue to act as superintendent of this department. The Philadelphia office, in the Knickerbocker Building, will in no way interfere with Mr. Harley's agency at 2515 Germantown Avenue. He will continue to have machines in operation and on exhibition at this place, and will represent the company throughout the territory already covered by him. The new office has been established in Philadelphia to enable the representatives of the company to get in closer touch with the knitting trade. A branch office has been established in Charlotte, N. C., in charge of E. P. Steers. At this office there are six machines on exhibition and in daily operation. This has enabled many Southern manufacturers to personally inspect the machines in operation. There is also a resident expert at the Charlotte office, and both there and in Philadelphia, a supply of parts and needles is kept in stock, from which the needs of the trade can be promptly supplied.

Providence Office.

John J. Keller & Company, announce that for the better prosecution of their business and for the convenience of their many customers, they have opened an office at 56 South Water street, Providence, R. I., under the management of Arthur Turnbull, with whom will be associated G. W. Gleason, formerly of their Boston office.

Philadelphia Branch.

The Philadelphia office of James White & Co., dealers in cotton yarns, at 233 Chestnut street, is now in charge of Robert M. Griffith.

FRANKLIN BLEACHING AND FINISHING WORKS, LTD.,

BLEACHERS AND FINISHERS OF

COTTON AND LINEN FABRICS,

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PHILADELPHIA, PA.

COLUMBIA PRINT WORKS,

Bleachers, Dyers, Printers and Finishers,

OF ALL KINDS OF FABRICS.

3-4 and 6-4 Woolens and Mixed Cassimeres,

ALSO

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JOHN CAPSTICK & SONS, Montville, N. J.

Freight via D. L. & W. R. R.

New York Office, Lawrence Building, 190 West Broadway.

FAST COLORS

For Wool, Woolen and Cotton Yarn and Piece Goods Dyeing, and for Calico Printing

ALIZARINE RED, PASTE AND POWDER.

Alizarine Blues, Oranges, Browns, Yellows, Maroon, Gray and Black.
Cœruleine, Galleine, Mythylene Grays.
Thionine Blues, Thionine Indigo, Solid Green and
PATENT BLUES (superseding Extracts of Indigo on account of fastness and color bloom) for Wool and Silk, Benzidine and Primuline Colors, Zinc Dust, Aniline Salts and Oil.

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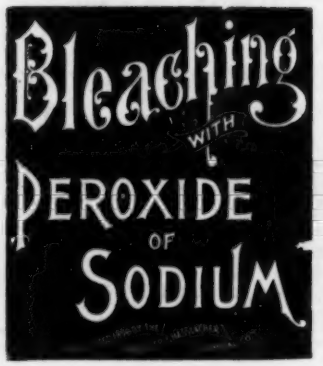
WILL SEND PAMPHLET ON

Peroxide of Sodium Works: Niagara Falls, New York.



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IMPORTERS AND
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DYE STUFFS

New York,
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FARBENFABRIKEN OF ELBERFELD CO.

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Alizarine Black-Bayer

(DIAMOND BLACK.)

THE SHARPLESS DYE-WOOD EXTRACT CO.,

OFFICES: 648, 650, 651 THE BOURSE, PHILADELPHIA.

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INDIGO BLUE DYE

Wool Scouring, Raw Stock in Piece.
Dyeing all shades. Unions and shades.

All work done by experienced workmen and guaranteed to give satisfaction.

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COLONIAL BLACK

DOUBLE STRENGTH. UNEQUALED FOR DEPTH OF SHADE.
Users of Black should investigate. Fastest Cotton Black on the market.

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Special Colors for
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ANILINES, EXTRACT CUTCH, GAMBIER, SUMAC, LOGWOOD, Etc.
SCOURING COMPOUNDS, COTTON SOFTENERS, MILL SUPPLIES

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Aniline Colors,
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FAST COLORS for wool dyeing, one dip cotton colors, novelties and specialties for calico printing.

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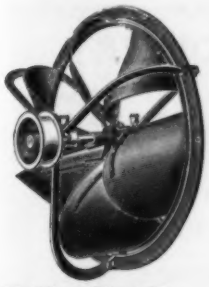

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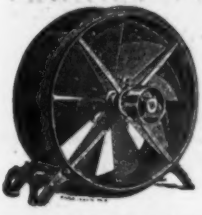

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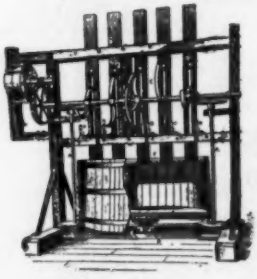

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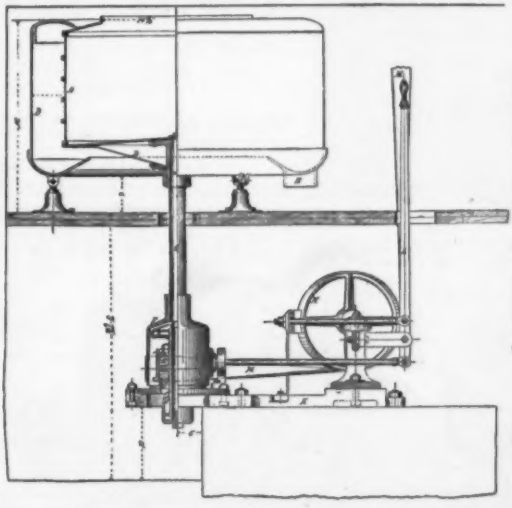

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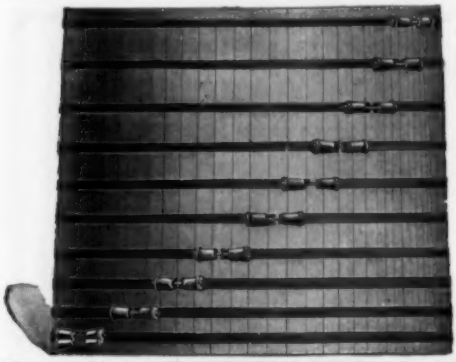

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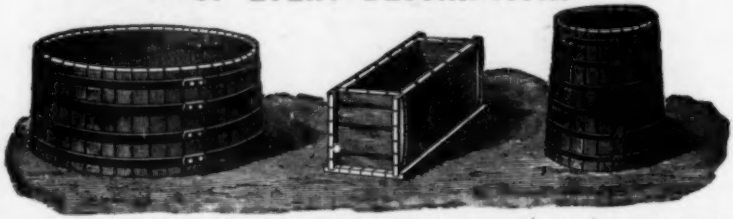

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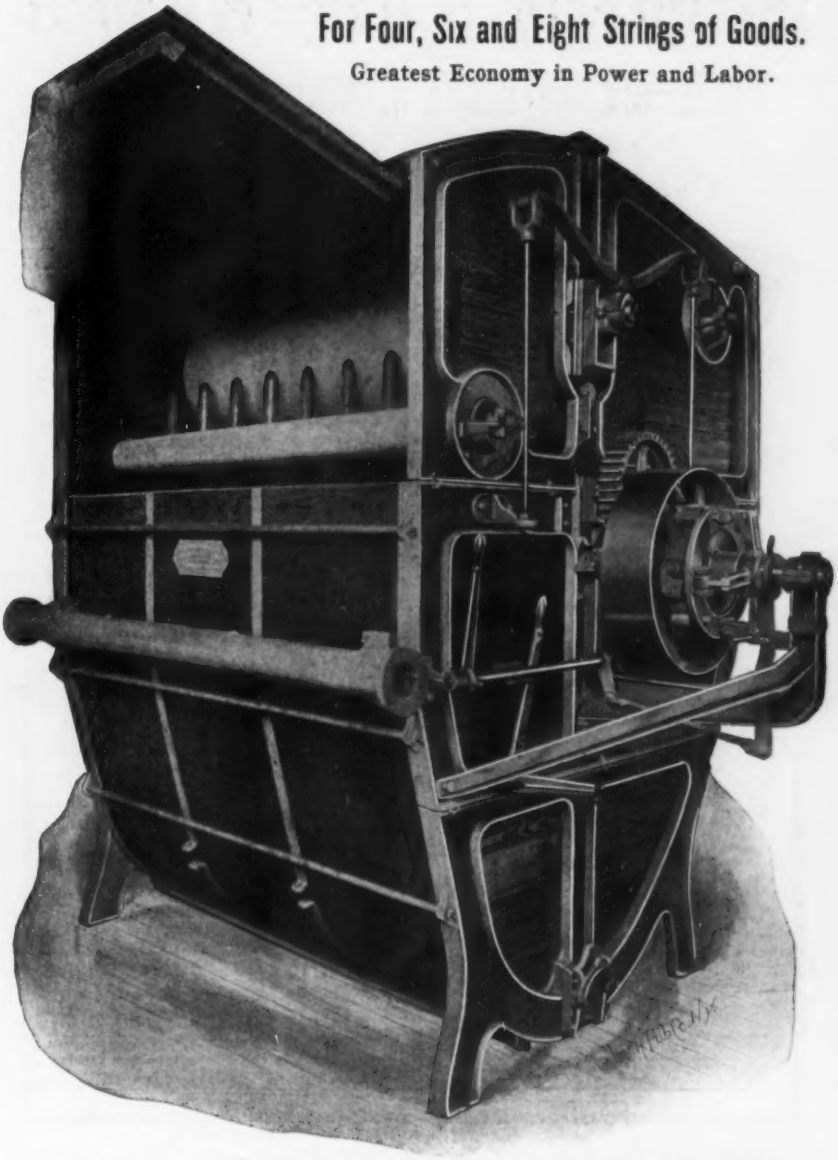

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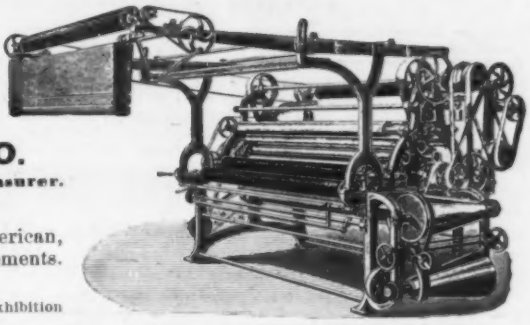

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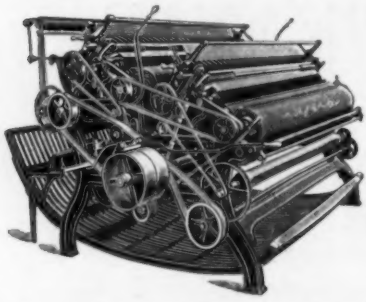

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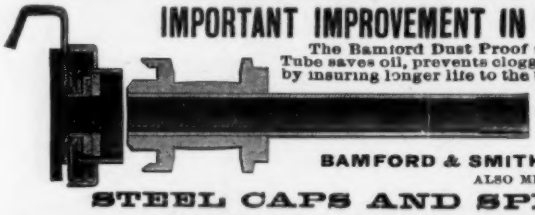

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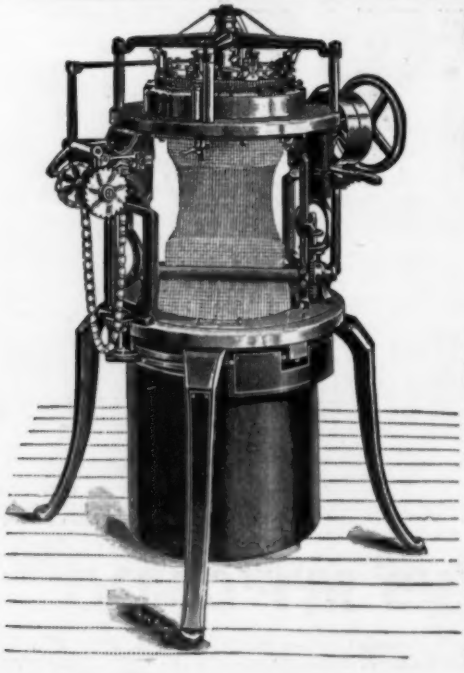

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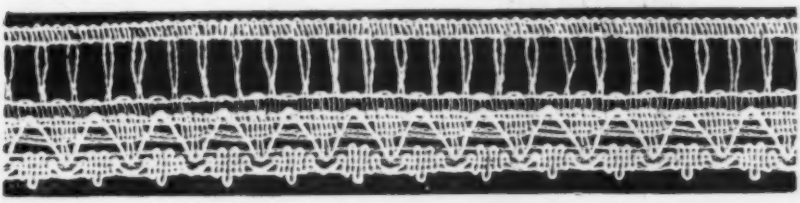

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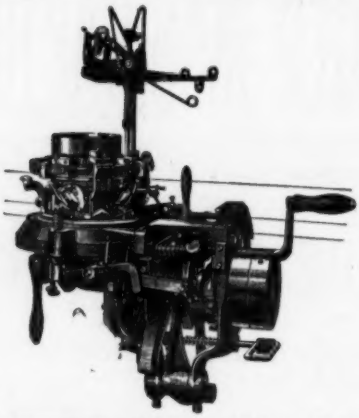

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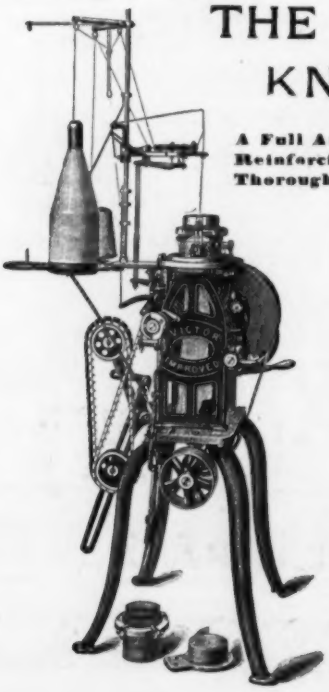

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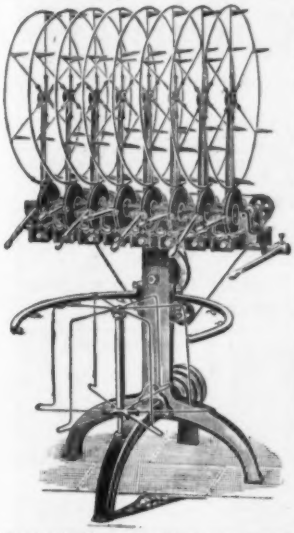

Back-winding Machine for winding the yarn from imperfect pieces back into skeins

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR.

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

Builder of the **ONLY BACK-WINDING MACHINE** in the market. Ravels and backwinds all classes of Knit Goods, including plated work and fabric made on 8 feed plain or tuck machines.

All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Manties, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink, – in short, write us if you are in need of anything, or if you have any Machines for sale.

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CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinders and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS.

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W. C. VonBUCHWALD, Prop., Dealer in

SPECIAL SEWING MACHINES FOR MANUFACTURERS.

Sole agent for the Murphy High Speed Double Thread Trimming Machine for Concealed Hosiery Welting and Underwear.

Fabric trimmers put on all makes of machines.

All makes of machines Repaired, Altered and Rebuilt.

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Knitting Machinery

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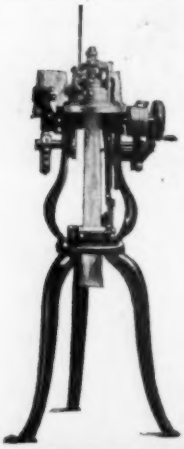

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Lakeport, N. H.,

Manufacturers of

Knitting Machinery,

INCLUDING

Pepper's Flat-Ribbed Cuff Machine,

Automatic Welt and Loose Course Machine for Sock Tops. New Circular Stripes with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

GOLF AND BICYCLE STOCKING MACHINES.

All kinds of

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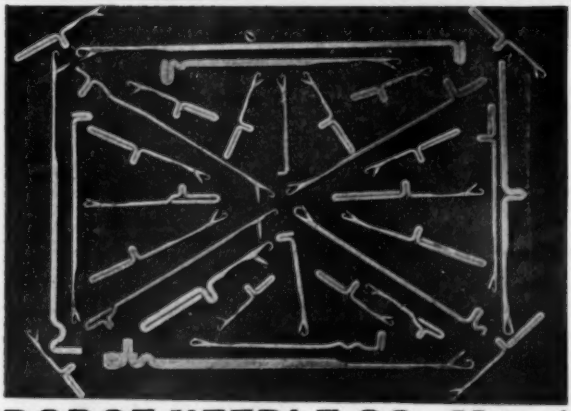
For Men's Underwear, Ladies' and Misses' Hose Legs & Leggings.

CORRESPONDENCE SOLICITED.



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Needles for all

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OUR

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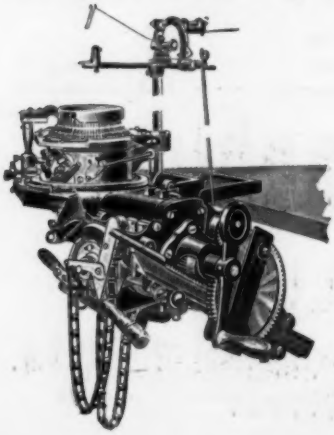
Sunken Rivet Head Needles

will save you money every day in the year

DODGE NEEDLE CO., Manchester, N.H.

Excelsior Knitting Machine Manufacturing Co.



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7-8 AUTOMATIC KNITTERS,

Adapted for Ladies' Plain Hose, Men's Half Hose or footing Ribbed Hose.

Its Production is Greater than any 7-8 or full Automatic Machine now on the market.

We make the best in

QUALITY
COLORING
ARTISTIC EFFECT

HOSIERY BANDS AND LABELS

We carry all the "Specials."

Write for our book and samples.

DOCKER-FOSTER CO.
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A Profitable Novelty for Underwear Manufacturers.

I have recently invented and patented (No. 642,920) a Supporting Undershirt which is Hygienic and possesses features which should give it a ready sale at a good profit.

I want to arrange with some manufacturer of men's shirts to handle it on equitable bases.

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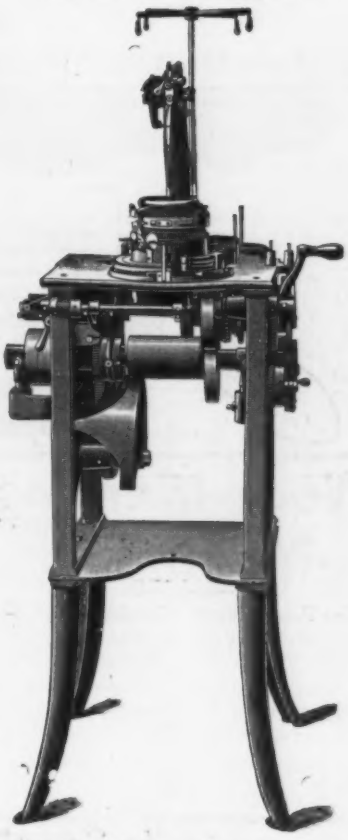
ACME
Automatic Knitter,
FOR SEAMLESS HOSIERY.

All Kinds and Gauges.



Best method of transferring ribbed legs and tops.

Greatest production of perfect work at least expense.

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PAXTON & O'NEILL'S

3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

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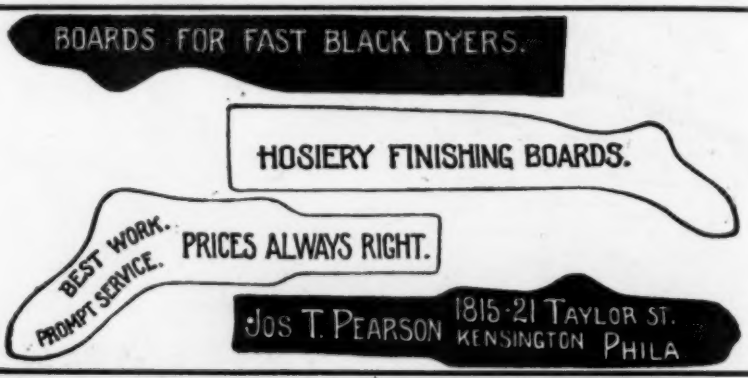
Cylinders and Dials for all size machines.



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The Power Neck Marking Machines made by Thos. Kennedy, Cohoes, N. Y., are the original machines for this purpose and are thoroughly covered by Patents.

Do not use machines of a character that infringe on our patents.

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GAS ENGINES for city or country.
BRUSHING MACHINERY
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EFFICIENT
DURABLE
LOW IN PRICE.

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SOLE MANUFACTURER OF THE

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1890.

The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

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NECK SHAPING MACHINES

For automatically centering the neck on Underwear Shirts. Crimps from 400 to 500 Doz. PER DAY at a cost of from 25 to 35 cents per 100 doz. Leaves no pencil or chalk marks on goods. Easy to operate. Runs by power. Increases production more than 100 per cent. Curtails the cost of labor 150%.

Send for circulars. See cut and description in July number, page 70.

ECLIPSE MACHINE CO.,

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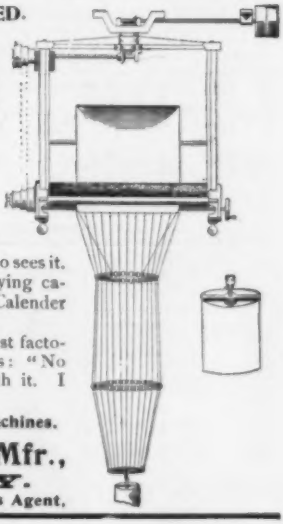
NEW CHAMPION POWER

NECK AND CENTRE MARKER

COMBINED.



It Saves one handling of the goods. Marks perfectly. Strongest and quickest working machine ever made.

We also make

Johnson's Vertical Knit Goods Dryer

which pleases every practical man who sees it. Our new attachment increases drying capacity from ⅓ to ½. See our new Calender Head before you buy any other.

The president of one of the largest factories in New York State says: "No other Dryer can compare with it. I want no other in my plant."

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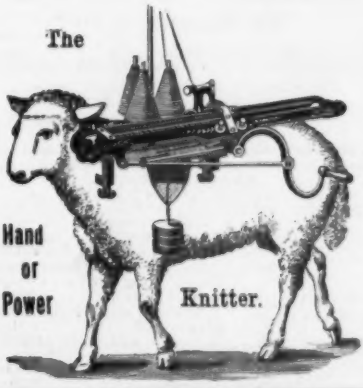
WM. T. LINTNER, Gloversville, N. Y., General Sales Agent.



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LEADER OF KNITTERS

ORIGINAL and BEST
PARTS INTERCHANGABLE
EASILY and QUICKLY OBTAINED

Hosiery and Sweater
Cardigan Jacket
Automatic Racked Border
Full Fashioned Union Suit

MACHINES

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Combination Suits,
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Cuffs,
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Shaped Swiss Ribs,
Rib Tails, etc.

Over 1000 machines now in operation.

Just now we are making a speciality of 14 and 16 feed machines for stripes.

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GERMANTOWN HOSIERY MACHINE WORKS

CARDIGAN JACKET and CIRCULAR KNITTING MACHINES
For Shirts and Hosiery.

Cylinders and Dials
Of all kinds made and hardened.

GERMANTOWN SKEIN WINDER and LINKS FOR DOUBLE RIBS.

Special Machine and Jobbing Work Promptly Attended to.

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Carefully constructed, substantially built.

Filtering Oilers, Parts Removable Without Disturbing Frame,

Delicate Adjustment, High Speed with Durability.

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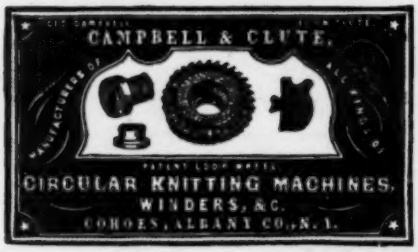
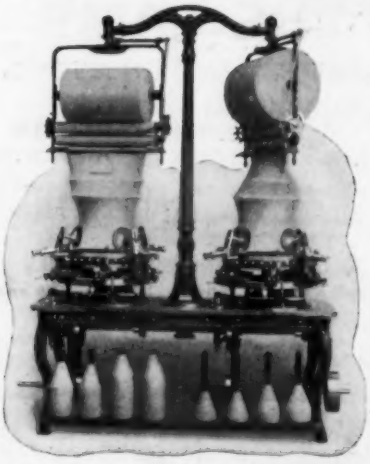


Four and Five Section Flat Cuff Machines.



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Knitters, Winders, Burrs, Attachments.

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For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

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We Do Bleaching and Dyeing

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And all kinds of Sewing Machine Needles.
Parts for Wilcox & Gibbs Mfg., and all Sewing Machines
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The best hosiery needle in the market.
Manufactured by
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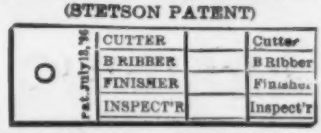
PIECE WORK COUPON TAGS
(STETSON PATENT)



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Only complete system for keeping account of piece work in Knitting Mills, Shirt and Collar Factories, etc.
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BRAIDING MACHINES OF SUPERIOR QUALITY
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All work guaranteed.

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For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.
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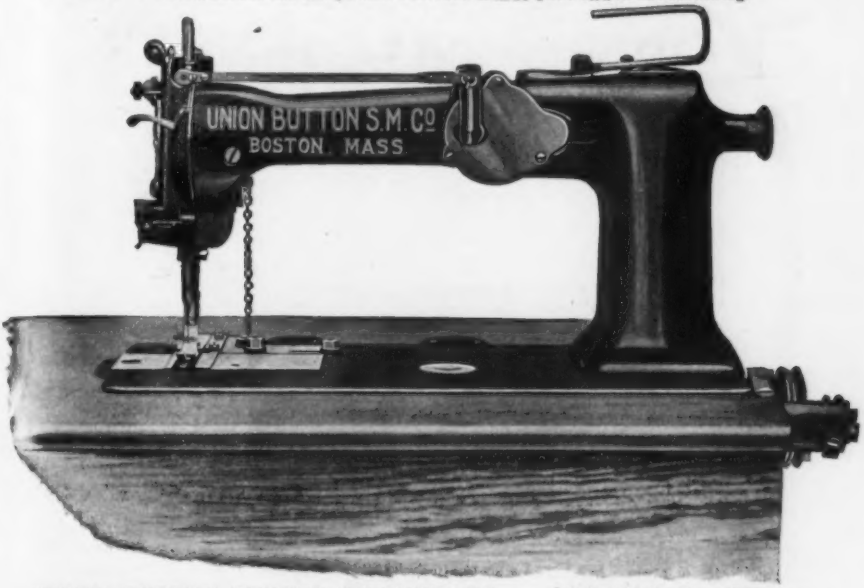
Our New Drawer Strapping Machine

SHOWN BELOW, will sew on straps of any width and thickness, makes either wide or narrow stitching across the straps and will also **BAR** each end of the stitching.



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RUN YOUR SEWING MACHINES WITHOUT A BELT!

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IT IS A GREAT IMPROVEMENT.
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Do you use Cylinder Dryers?

If they are not rapid enough we can double their capacity.

Tell us what you've got and we will tell you what we can do for you.

One mill writes as follows: "Your attachment to our cylinder dryer simply doubles its capacity."

We have helped others and can help you.

We also manufacture Conveyors for all materials, Exhausters, Heaters, Blowers, Fans, Engines and Mechanical Draft Apparatus. Write for particulars.

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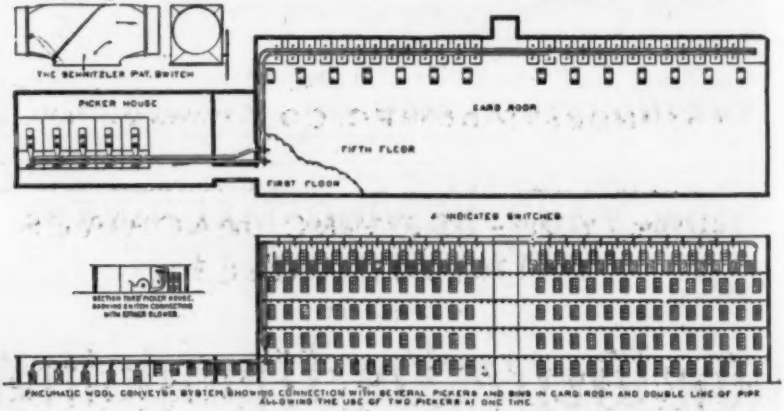
THE BOSTON PNEUMATIC CONVEYOR

For the Rapid Handling of Wool, Cotton Stock, Rags, Excelsior, Jute and all kinds of Fibrous Material, wet or dry.

Using the Boston Patent Wool Fan and Patent Switch.



PNEUMATIC WOOL CONVEYOR SYSTEM, SHOWING CONNECTION WITH SEVERAL PICKERS AND BINS IN CARD ROOM AND DOUBLE LINE OF PIPE ALLOWING THE USE OF TWO PICKERS AT ONE TIME.

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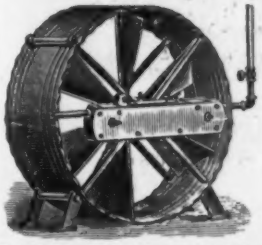
The Main Points About a FAN



To consider are:—

Does it move more air for size of Fan than others? Is it strongly built? Is it noiseless? Is it easily adjustable for different positions and conditions? Is it economical of power? Does it compare favorably in price with competitors, results considered? For the Wing Disc Fan, we answer *"YES"* to all the above. Send for catalogue.

L. J. WING MFG. CO., 96 Liberty St., NEW YORK.

MODERATE PRICED

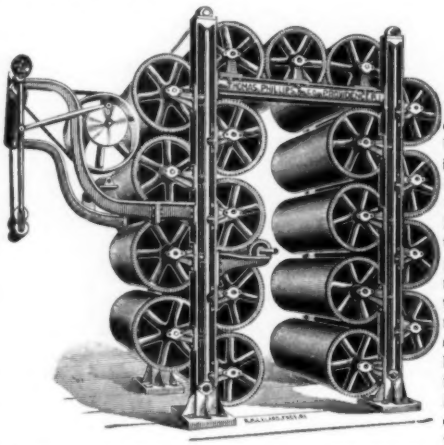
Gear Cutting Machine.

Especially adapted for use in Repair Shops. Now in use in **Two Hundred and Fifty** representative mills, including **Twenty-one** in Fall River, Mass. On application, we shall be glad to submit full particulars, prices, and photographs of latest improvements. Send for our **1900 Pamphlet.**

THE D. E. WHITON MACHINE CO.,

19 Oak Street, New London, Conn.

Drying and Finishing Machinery.



Phillips Upright Drying Machine.

The cut shows a 19-can machine with two tiers with intermediate can for continuous drying. We build any arrangement of stringing and furnish any desired number of cans, of any length, either with Phillips Steel Head or Cast Iron. We strongly advise our Steel Head Can. It is a big improvement as eight years' experience has demonstrated. This upright machine enables cloth to run without wide intermediate spaces between the tiers, as in horizontal machine, thus avoiding "scrimps." We also build Horizontal Frames, but on radically different principles from most others. Our illustrated catalogue explains all these points at length and has many plates showing different styles of stringing. It may be had for the asking.

THE THOMAS PHILLIPS CO.,

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PREVENTS SLIPPING.

Always ready for INSTANT use.

No Spatter
No Smear
No Muss
No Grease Spots on the Warp.

"I have used it for years—and it's good."
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BUT A FREE SAMPLE SENT BY MAIL TELLS THE STORY BEST TO YOU.

STEPHENSON MFG. CO.,

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WHIRL ROUND YOUR HEAD
A CLOSED VESSEL FILLED WITH WET STEAM The water particles will be deposited on the farther end. Why? Simply because water is nearly 1600 times heavier than steam and is therefore thrown outward with 1600 times the centrifugal force.
Change the experiment and admit exhaust steam to the bottom of the STURTEVANT EXHAUST HEAD. It passes up the interior pipes, is discharged tangentially close to the shell, and is thereby given a vigorous whirling motion. The entrained water — likewise the oil — flies outward, strikes the cool side and trickles down to the outlet at the bottom. The steam, now perfectly dry, finds ready escape through the central opening above. The action is positive and absolute. PERFECT SEPARATION MUST BE THE RESULT No spray; no rotting roofs.
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CONTAINS
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PRODUCES
NO BACK PRESSURE
INSURES
PERFECT SEPARATION
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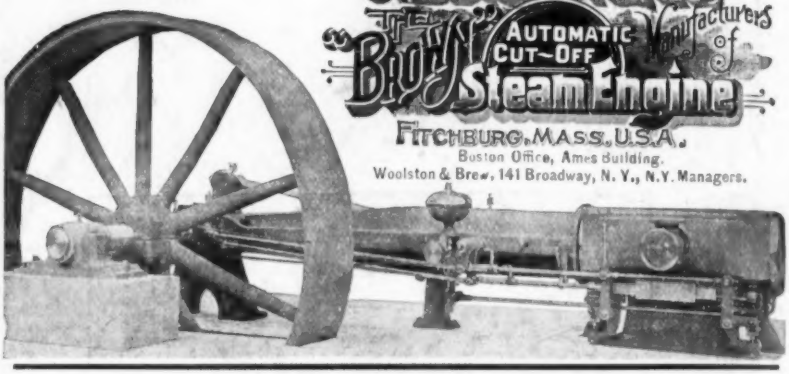

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